

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU
Edition : 31.07.95
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/9F2250R601
Type number : 0 460 494 367
Customer Part-No. :

Customer-specific information
Customer : PSA

Engine : XUD 9 BTF/L3 U6

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 022

Opening
Pressure> bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 450

Start of delivery
Prestroke mm: -
> (from BDC): -

Indicator setting
Piston stroke> mm: 0,3
Outlet> : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Charge press. hPa: 1000
Setting value mm: 9.30...9.70

Shutoff
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Charge press hPa: 1000
Setting value bar: 6.50...7.10
Shutoff
electromagnet>Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1200
Charge press. hPa: 1000
Del. quantity cm3/
> 1000S.: 53.50...54.50
Shutoff
electromagnet>Volt: 12
Dispersion cm3/: 2.0
> 1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
> 1000S.: 36.0...37.0
Shutoff
electromagnet>Volt: 12.0

Low-idle speed regulation

Speed 1/min: 440
Del. quantity cm3/
> 1000S.: 15.0...17.0
Shutoff
electromagnet>Volt: 12.0
Del. quantity cm3/: 2.0
> 1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 490
Del. quantity cm3/
> 1000S.: 8.00...9.00
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2575
Charge press hPa: 1000
Del. quantity cm3/
> 1000S.: 12.0...16.0
Shutoff
electromagnet>Volt: 12

Start:

Speed 1/min: 150

Del. quantity cm3/: 37.00...67.00  
mind> 1000S.: 37.00  
Shutoff  
electromagnet>Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 300  
Charge press hPa: 1000  
TD travel mm: 6.00...7.20  
> mm: (6.00...7.20)  
Timing valve Volt: -  
electromagnet>Volt: 12.0  
2nd speed 1/min: 2000  
Charge press hPa: 1000  
TD travel mm: 0.00...1.20  
> mm: (0.00...1.20)  
Timing valve Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
3rd speed 1/min: 750  
Charge press hPa: 1000  
TD travel mm: 7.80...8.60  
> mm: (7.50...8.90)  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
4th speed 1/min: 1250  
Charge press hPa: 1000  
TD travel mm: 9.30...9.70  
> mm: (8.80...10.20)  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
5th speed 1/min: 1750  
Charge press. hPa: 1000  
TD travel mm: 11.1...11.9  
> mm: (10.8...12.2)  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0

Supply-pump pressure characteristic:

1st speed 1/min: 300  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 5.00...5.60  
> bar: -  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12  
2nd speed 1/min: 750  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 5.70...6.30  
> bar: (5.60...6.80)

Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12  
3rd speed 1/min: 1250  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 6.50...7.10  
> bar: -  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12  
4th speed 1/min: 1750  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 7.30...7.90  
> bar: -  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 50.00...94.40  
quantity> cm3/10s: (35.00...109.4)  
2nd speed 1/min: 2150  
Charge press. hPa: 1000  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 77.70...161.10  
quantity> cm3/10s: (62.70...176.10)

Delivery-quant. and breakaway char.:

1st speed 1/min: 750  
Charge-air pressure-setting  
point> hPa: 350  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 45.0...46.0  
> 1000S.: (42.5...48.5)  
2nd speed 1/min: 2750  
Charge press. hPa: 1000  
Timing valve Volt: -  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm3/: 0.00...6.00  
> 1000S.: (0.00...6.00)  
3rd speed 1/min: 2575  
Charge press. hPa: 1000  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0

Del. quantity cm<sup>3</sup>/: 12.0...16.0  
> 1000S.: (10.0...18.00)  
4th speed 1/min: 2375  
Charge press. hPa: 1000  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 34.0...44.0  
> 1000S.: (33.0...45.0)  
5th speed 1/min: 2150  
Charge press. hPa: 1000  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 49.10...51.10  
> 1000S.: (47.90...52.30)  
6th speed 1/min: 2000  
Charge press. hPa: 1000  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 51.0...53.0  
> 1000S.: (49.8...54.2)  
7th speed 1/min: 1250  
Charge press. hPa: 1000  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 53.5...54.5  
> 1000S.: (51.8...56.2)  
8th speed 1/min: 500  
Charge press. hPa: 1000  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 46.80...49.80  
> 1000S.: (45.30...51.30)  
9th speed 1/min: 500  
Charge press. hPa: -  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 36.00...37.00  
> 1000S.: (33.50...39.50)

Mech. shutoff:

1st speed 1/min: 2000  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
> 1000S.: (0.00...3.00)  
Shutoff  
electromagnet>volt: 12.0  
Timing valve Volt: -

Electr. shutoff:

1st speed 1/min: 400  
Charge press. hPa: -

Del. quantity cm<sup>3</sup>/: 0.00...3.00  
> 1000S.: (0.00...3.00)  
Shutoff  
electromagnet>volt: -  
Timing valve Volt: -  
Damper set qty.:  
LFG-setting:  
Idle delivery:  
1st speed 1/min: 440  
Timing valve Volt: -  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 15.0...17.0  
> 1000S.: (12.0...20.0)

High Idle:

1st speed 1/mi: 490  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 15.0...17.0  
> 1000S.: (12.0...20.0)

Rest delivery:

1st speed 1/min: 490  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 8.0...9.0  
> 1000S.: (6.5...10.5)

Part-Load del.at 3rd inj.-qty.  
terza fermo della portata  
stop (EGR set)  
scarico) (ARF)  
gaz d'échappement-ARF)  
Spacing mm: 12.0

1st speed 1/min: 1250  
Charge press. hPa: 1000  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 24.00...26.00  
> 1000S.: (21.00...29.00)  
2nd speed 1/min: 500  
Charge press. hPa: 1000  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 9.0...11.0  
> 1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 200  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 50.00...56.00  
> 1000S.: (45.50...60.50)

2nd speed 1/min: 380  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 25.00...45.00  
> 1000S.: (25.00...45.00)

4th speed 1/min: 150  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 37.00...67.00  
> 1000S.: (37.00...67.00)

Shutoff electromagnet:

Cut-in  
>min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.2...3.4
KF	mm: KOT
MS	mm: 1.1...1.5
XK	mm: ARF 3 =1,9V
XL	mm: ARF 4 =1,0V
Ya	mm: 25.8...29.8
Yb	mm: 36.1...50.1

Ajustement Potentiometer:

Angle for  
pot. > °: 35.0  
Supply voltage  
pot. > volt: 5.0

Remarks:

⋮

Ya = Distance between VE flange and  
speed-control lever in idle  
position  
Measurement point = edge of control  
lever on drive end

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position  
Measurement point = edge of control

Lever on distributor-head end

Permissible port/port scatter with  
stop test, electrical = max. 5.0  
ccm/1000 S.

Permissible port/port scatter with  
stop test, mechanical = max. 5.0  
ccm/1000 S.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU  
Edition : 04.08.95  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/9F2250R445-3  
Type number : 0 460 494 370  
Customer Part-No. :

Customer-specific information  
Customer : PSA

Engine : XUD 9 TF-L  
  
Power KW: 67

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return>temp. > °C  
with>thermometer> : 40.00...48.00  
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly> : 1 688 901 022

Opening  
Pressure> bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall>thickness : 2.00  
x Length> mm: 450

Start of delivery  
Prestroke mm: -  
> (from BDC): -

Indicator setting  
Piston stroke> mm: 0,3  
Outlet> : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500

A05

Charge press. hPa: 1000  
Setting value mm: 3.90...4.30  
Shutoff  
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1500  
Charge press hPa: 1000  
Setting value bar: 5.40...6.00  
Shutoff  
electromagnet>Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 54.00...55.00  
Shutoff  
electromagnet>Volt: 12  
Dispersion cm<sup>3</sup>/: 2.0  
> 1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 36.5...37.5  
Shutoff  
electromagnet>Volt: 12.0

Low-idle speed regulation

Speed 1/min: 440  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 15.0...17.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 2.0  
> 1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 490  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 8.00...9.00  
Shutoff  
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2575  
Charge press hPa: 1000  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 12.0...16.0  
Shutoff  
electromagnet>Volt: 12

Start:

Speed 1/min: 150  
Del. quantity cm<sup>3</sup>/: 37.00...67.00  
mind> 1000S.: 37.00  
Shutoff  
electromagnet>Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 900  
Charge press hPa: 1000  
TD travel mm: 0.80...1.60  
> mm: (0.50...1.90)  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1500  
Charge press hPa: 1000  
TD travel mm: 3.90...4.30  
> mm: (3.40...4.80)  
Shutoff  
electromagnet>Volt: 12.0  
3rd speed 1/min: 2000  
Charge press hPa: 1000  
TD travel mm: 6.10...6.90  
> mm: (5.80...7.20)  
Shutoff  
electromagnet>Volt: 12.0

Supply-pump pressure characteristic:

1st speed 1/min: 900  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 3.90...4.50  
> bar: -  
Shutoff  
electromagnet>Volt: 12  
2nd speed 1/min: 1500  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 5.40...6.00  
> bar: -  
Shutoff  
electromagnet>Volt: 12  
3rd speed 1/min: 2000  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 6.50...7.10  
> bar: -  
Shutoff  
electromagnet>Volt: 12

Overlow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0

Overflow : 41.60...83.30  
quantity> cm<sup>3</sup>/10s: (26.60...98.3)  
2nd speed 1/min: 2150  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 55.50...138.80  
quantity> cm<sup>3</sup>/10s: (40.50...153.80)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 750  
Charge-air pressure-setting  
point> hPa: 350  
LDA-stroke mm: 5.9  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 45.5...46.5  
> 1000S.: (43.0...49.0)  
2nd speed 1/min: 2750  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 0.00...6.00  
> 1000S.: (0.00...6.00)  
3rd speed 1/min: 2575  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 12.0...16.0  
> 1000S.: (10.0...18.00)  
4th speed 1/min: 2375  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 34.0...44.0  
> 1000S.: (33.0...45.0)  
5th speed 1/min: 2150  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 49.10...51.10  
> 1000S.: (47.90...52.30)  
6th speed 1/min: 2000  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 51.0...53.0  
> 1000S.: (49.8...54.2)  
7th speed 1/min: 1250  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 54.0...55.0  
> 1000S.: (52.3...56.7)  
8th speed 1/min: 500  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0

Del. quantity cm<sup>3</sup>/: 46.80...49.80  
> 1000S.: (45.30...51.30)  
9th speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 36.50...37.50  
> 1000S.: (34.00...40.00)

Mech. shutoff:

1st speed 1/min: 2000  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
> 1000S.: (0.00...3.00)  
Shutoff  
electromagnet>volt: 12.0

Electr. shutoff:

1st speed 1/min: 400  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
> 1000S.: (0.00...3.00)  
Shutoff  
electromagnet>volt: -

Damper set qty.:

LFG-setting:

Idle delivery:

1st speed 1/min: 440  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 15.0...17.0  
> 1000S.: (12.0...20.0)

High Idle:

1st speed 1/mi: 490  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 15.0...17.0  
> 1000S.: (12.0...20.0)

Rest delivery:

1st speed 1/min: 490  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 8.0...9.0  
> 1000S.: (6.5...10.5)

Automatic starting fuel delivery:

1st speed 1/min: 200  
Shutoff  
electromagnet>Volt: 12.0

Del. quantity cm<sup>3</sup>/: 45.50...60.50  
> 1000S.: -

2nd speed 1/min: 380  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 25.00...45.00  
> 1000S.: (25.00...45.00)

4th speed 1/min: 150  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 37.00...67.00  
> 1000S.: (37.00...67.00)

Shutoff electromagnet:

Cut-in  
>min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: 3.2...3.4  
KF mm: KOT  
MS mm: 1.1...1.5  
Ya mm: 25.8...29.8  
Yb mm: 68.0...82.0

Remarks:

:  
:  
Ya = Distance between VE flange and  
speed-control lever in idle  
position  
Measurement point = edge of control  
lever on drive end

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position  
Measurement point = edge of control  
lever on distributor-head end

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU  
Edition : 04.08.95  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/9F2250R513-1  
Type number : 0 460 494 371  
Customer Part-No. :

Customer-specific information  
Customer : PSA

Engine : XUD 9 TF-Y VAN

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return>temp. > °C  
with>thermometer> : 40.00...48.00  
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly> : 1 688 901 022

Opening  
Pressure> bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall>thickness : 2.00  
x Length> mm: 450

Start of delivery  
Prestroke mm: -  
> (from BDC): -

Injection-pump setting values  
Test specifications in parentheses

## Timing-device travel

Speed 1/min: 1250  
Charge press. hPa: 1000  
Setting value mm: 3.40...3.80  
Shutoff  
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1250  
Charge press hPa: 1000  
Setting value bar: 5.30...5.90  
Shutoff  
electromagnet>Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250  
Charge press. hPa: 1000  
Del. quantity cm3/  
> 1000S.: 53.50...54.50  
Shutoff  
electromagnet>Volt: 12  
Dispersion cm3/: 2.0  
> 1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500  
Del. quantity cm3/  
> 1000S.: 36.5...37.5  
Shutoff  
electromagnet>Volt: 12.0

Low-idle speed regulation

Speed 1/min: 440  
Del. quantity cm3/  
> 1000S.: 15.0...17.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 2.0  
> 1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 490  
Del. quantity cm3/  
> 1000S.: 8.00...9.00  
Shutoff  
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2575  
Charge press hPa: 1000  
Del. quantity cm3/  
> 1000S.: 12.0...16.0  
Shutoff  
electromagnet>Volt: 12

Start:

Speed 1/min: 150  
Del. quantity cm3/: 37.00...67.00  
mind> 1000S.: 37.00  
Shutoff  
electromagnet>Volt: 12



Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1250  
Charge press hPa: -  
Inj.-qty. cm<sup>3</sup>/  
difference> 1000S.: -12.0...14.0 \*  
Shutoff  
electromagnet>Volt: 12.0  
TD-travel dif.measurement

1.Speed 1/min: 1250  
Charge press hPa: -  
TD-travel  
difference> mm: -0.9...1.1 \*  
Shutoff  
electromagnet>Volt: 12.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750  
Charge press hPa: 1000  
TD travel mm: 1.10...1.90  
> mm: (0.80...2.20)  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1250  
Charge press hPa: 1000  
TD travel mm: 3.40...3.80  
> mm: (2.90...4.30)  
Shutoff  
electromagnet>Volt: 12.0  
3rd speed 1/min: 2000  
Charge press hPa: 1000  
TD travel mm: 6.10...6.90  
> mm: (5.80...7.20)  
Shutoff  
electromagnet>Volt: 12.0

Supply-pump pressure characteristic:

1st speed 1/min: 750  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 4.00...4.60  
> bar: -  
Shutoff  
electromagnet>Volt: 12  
2nd speed 1/min: 1250  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 5.30...5.90  
> bar: -  
Shutoff  
electromagnet>Volt: 12  
3rd speed 1/min: 2000  
Charge press. hPa: 1000

Supply-pump  
pressure> bar: 7.20...7.80  
> bar: -  
Shutoff  
electromagnet>Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 41.60...83.30  
quantity> cm<sup>3</sup>/10s: (26.60...98.3)  
2nd speed 1/min: 2150  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 55.50...138.80  
quantity> cm<sup>3</sup>/10s: (40.50...153.80)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 750  
Charge-air pressure-setting  
point> hPa: 350  
LDA-stroke mm: 5.9  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 45.5...46.5  
> 1000S.: (43.0...49.0)  
2nd speed 1/min: 2750  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 0.00...6.00  
> 1000S.: (0.00...6.00)  
3rd speed 1/min: 2575  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 12.0...16.0  
> 1000S.: (10.0...18.00)  
4th speed 1/min: 2375  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 34.0...44.0  
> 1000S.: (33.0...45.0)  
5th speed 1/min: 2150  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 49.10...51.10  
> 1000S.: (47.90...52.30)  
6th speed 1/min: 2000  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0

Del. quantity cm<sup>3</sup>/: 51.0...53.0  
> 1000S.: (49.8...54.2)  
7th speed 1/min: 1250  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 54.0...55.0  
> 1000S.: (52.3...56.7)  
8th speed 1/min: 500  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 46.80...49.80  
> 1000S.: (45.30...51.30)  
9th speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 36.50...37.50  
> 1000S.: (34.00...40.00)

Mech. shutoff:

1st speed 1/min: 2000  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
> 1000S.: (0.00...3.00)  
Shutoff  
electromagnet>volt: 12.0

Electr. shutoff:

1st speed 1/min: 400  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
> 1000S.: (0.00...3.00)  
Shutoff  
electromagnet>volt: -

Damper set qty.:

LFG-setting:

Idle delivery:

1st speed 1/min: 440  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 15.0...17.0  
> 1000S.: (12.0...20.0)

High Idle:

1st speed 1/mi: 490  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 15.0...17.0  
> 1000S.: (12.0...20.0)

Rest delivery:

A10

1st speed 1/min: 490  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 8.0...9.0  
> 1000S.: (6.5...10.5)

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1250  
Charge press. hPa: -  
Inj.-qty. cm<sup>3</sup>/ : 2.0...8.0 Z"  
difference> 1000S.: -  
Shutoff  
electromagnet>Volt: 12.0

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):  
1st speed 1/min: 1250  
Charge press. hPa: -  
TD-travel : -2.1...2.5  
difference> mm: -(1.6...3.0)  
Shutoff  
electromagnet>Volt: 12.0

SP press.-dif.measurement:  
pompa di mandata (FP):  
1st speed 1/min: 1250  
Charge press. hPa: -  
Supply pump-  
pressure > : -0.9...1.3  
difference> bar: -(0.7...1.5)  
Shutoff  
electromagnet>Volt: 12.0

Part-load del.at 3rd inj.-qty.  
terza fermo della portata  
stop (EGR set)  
scarico) (ARF)  
gaz d'échappement-ARF)

1st speed 1/min: 1250  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 22.8...24.8  
> 1000S.: (19.8...27.8)

Automatic starting fuel delivery:

1st speed 1/min: 200  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 45.50...60.50  
> 1000S.: -

2nd speed 1/min: 380  
Shutoff  
electromagnet>Volt: 12.0

Del. quantity cm<sup>3</sup>/: 25.00...45.00  
> 1000S.: (25.00...45.00)

4th speed 1/min: 150

Shutoff

electromagnet>Volt: 12.0

Del. quantity cm<sup>3</sup>/: 37.00...67.00

> 1000S.: (37.00...67.00)

Shutoff electromagnet:

Cut-in

>min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: 3.2...3.4

KF mm: 5.6...6.0

MS mm: 1.1...1.5

Ya mm: 28.8...32.8

Yb mm: 69.2...80.8

Remarks:

⋮

Ya = Distance between VE flange and  
speed-control lever in idle  
position

Measurement point = edge of control  
lever on drive end

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position

Measurement point = edge of control  
lever on distributor-head end

Permissible port/port scatter with  
stop test, mechanical = max. 5.0  
ccm/1000 S.

Permissible port/port scatter with  
stop test, electrical = max. 5.0  
ccm/1000 S.

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW  
Edition : 07.08.95  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/9F2300R597-4  
Type number : 0 460 494 373  
Customer Part-No. :

Customer-specific information  
Customer : VW

Engine : 1,9 l UD B4

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return>temp. > °C  
with>thermometer> : 40.00...48.00  
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly> : 1 688 901 000

Opening  
Pressure> bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall>thickness : 2.00  
x Length> mm: 840

Start of delivery  
Prestroke mm: -  
> (from BDC): -

Indicator setting  
Piston stroke> mm: 0.8  
Outlet> : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250  
Charge press. hPa: 750  
Setting value mm: 4.30...4.50

Shutoff  
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1250  
Charge press hPa: 750  
Setting value bar: 5.40...6.00  
Shutoff  
electromagnet>Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250  
Charge press. hPa: 750  
Del. quantity cm3/  
> 1000S.: 50.00...51.00  
Shutoff  
electromagnet>Volt: 12  
Dispersion cm3/: 2.5  
> 1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 450  
Del. quantity cm3/  
> 1000S.: 37.2...43.2  
Shutoff  
electromagnet>Volt: 12.0

Residual-Delivery Setting

Speed 1/min: 550  
Del. quantity cm3/  
> 1000S.: 7.00...8.00  
Shutoff  
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2600  
Charge press hPa: 750  
Del. quantity cm3/  
> 1000S.: 9.00...13.00  
Shutoff  
electromagnet>Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm3/: 32.5...47.5  
mind> 1000S.: 32.5  
Shutoff  
electromagnet>Volt: 12.0

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1250  
Inj.-qty. cm3/

difference> 1000S.: -7.0...11.0 \*  
Shutoff  
electromagnet>Volt: 12  
TD-travel dif.measurement

1.Speed 1/min: 1250  
TD-travel  
difference> mm: -1.9...2.1 \*  
Shutoff  
electromagnet>Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2100  
Charge press hPa: 750  
TD travel mm: 8.00...8.60  
> mm: (7.50...9.10)

Shutoff  
electromagnet>Volt: 12  
3rd speed 1/min: 1250  
Charge press hPa: 750  
TD travel mm: 4.30...4.50  
> mm: (3.60...5.20)

Shutoff  
electromagnet>Volt: 12  
4th speed 1/min: 750  
Charge press hPa: 750  
TD travel mm: 1.50...2.10  
> mm: (1.00...2.60)

Shutoff  
electromagnet>Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 750  
Charge press. hPa: 750  
Supply-pump  
pressure> bar: 4.30...4.90  
> bar: -

Shutoff  
electromagnet>Volt: 12  
2nd speed 1/min: 1250  
Charge press. hPa: 750  
Supply-pump  
pressure> bar: 5.40...6.00  
> bar: -

Shutoff  
electromagnet>Volt: 12  
3rd speed 1/min: 2100  
Charge press. hPa: 750  
Supply-pump  
pressure> bar: 7.40...8.00  
> bar: -

Shutoff  
electromagnet>Volt: 12

Overlow quantity at overflow valve:

1st speed 1/min: 1250  
Charge press. hPa: 750  
Shutoff  
electromagnet>Volt: 12  
Overflow : 41.70...86.10  
quantity> cm3/10s: (26.70...101.10)  
2nd speed 1/min: 2100  
Charge press. hPa: 750  
Shutoff  
electromagnet>Volt: 12  
Overflow : 55.60...152.90  
quantity> cm3/10s: (40.60...167.90)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2750  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 0.00...3.00  
> 1000S.: (0.00...3.00)  
5th speed 1/min: 2600  
Charge press. hPa: 750  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm3/: 9.00...13.00  
> 1000S.: (7.00...15.00)  
8th speed 1/min: 2400  
Charge press. hPa: 750  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm3/: 32.50...42.50  
> 1000S.: (31.50...43.50)  
9th speed 1/min: 2100  
Charge press. hPa: 750  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm3/: 42.00...44.00  
> 1000S.: (40.80...45.20)  
12th speed 1/min: 1250  
Charge press. hPa: 750  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm3/: 50.00...51.00  
> 1000S.: (48.3...52.7)  
21th speed 1/min: 450  
Charge press. hPa: -  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm3/: 37.20...43.20  
> 1000S.: (34.70...45.70)

Electr. shutoff:

1st speed 1/min: 450  
Del. quantity cm3/: 0.00...3.00

> 1000s.: (0.00...3.00)  
 Shutoff  
 electromagnet>volt: -

Damper set qty.:

LFG-setting:

Idle delivery:

1st speed 1/min: 450  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 16.00...18.00  
 > 1000s.: (13.00...21.00)

High Idle:

1st speed 1/mi: 500  
 Shutoff  
 electromagnet>Volt: 12  
 Del. quantity cm3/: 16.00...18.00  
 > 1000s.: (13.00...21.00)

Rest delivery:

1st speed 1/min: 550  
 Shutoff  
 electromagnet>Volt: 12  
 Del. quantity cm3/: 7.00...8.00  
 > 1000s.: (5.50...9.50)

Load-dependent start of delivery:  
 Inj.-qty.dif.measurement:

1st speed 1/min: 1250  
 Charge press. hPa: -  
 Inj.-qty. cm3/ : -4.5...6.5 "  
 difference> 1000s.: -  
 Shutoff  
 electromagnet>Volt: 12  
 2nd speed 1/min: 1250  
 Charge press. hPa: -  
 Inj.-qty. cm3/: 0.0...3.0 Z'  
 difference> 1000s.: -  
 Shutoff  
 electromagnet Volt: 12.0

TD-travel dif.measurement:  
 correttore anticipo iniezione (SV):  
 1st speed 1/min: 1250  
 Charge press. hPa: -  
 TD-travel : -2.5...2.9 '  
 difference> mm: -  
 Shutoff  
 electromagnet>Volt: 12  
 2nd speed 1/min: 1250  
 Charge press. hPa: ALFB  
 TD-travel : 0.00...0.60  
 difference> mm: -

KSB/AFB  
 valve > Volt: 12.0  
 Shutoff  
 electromagnet>Volt: 12.0

SP press.-dif.measurement:  
 pompa di mandata (FP):  
 1st speed 1/min: 1250  
 Charge press. hPa: -  
 Supply pump-  
 pressure > : -0.1...0.3 "  
 difference> bar: -  
 Shutoff  
 electromagnet>Volt: 12

Per-Load del.at 3rd inj.-qty.  
 terza fermo della portata  
 stop (EGR set)  
 scarico) (ARF)  
 gaz d'échappement-ARF)  
 Spacing mm: 12.0

1st speed 1/min: 1000  
 Charge press. hPa: 750  
 Shutoff  
 electromagnet>Volt: 12  
 Del. quantity cm3/: 34.00...36.00  
 > 1000s.: (32.00...38.00)

Automatic starting fuel delivery:

1st speed 1/min: 180  
 Shutoff  
 electromagnet>Volt: 12  
 Del. quantity cm3/: 35.00...55.00  
 > 1000s.: (35.00...55.00)

2nd speed 1/min: 380  
 Shutoff  
 electromagnet>Volt: 12  
 Del. quantity cm3/: 31.00...51.00  
 > 1000s.: (31.00...51.00)

3rd speed 1/min: 100  
 Shutoff  
 electromagnet>Volt: 12  
 Del. quantity cm3/: 37.00...43.00  
 > 1000s.: (32.50...47.50)

Shutoff electromagnet:

Cut-in  
 >min voltage : 10.0  
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
 K mm: 3.6...3.8  
 KF mm: KOT

MS	mm: 1.0...1.4
XK	mm: MIKROSCH.
XL	mm: A=0.8...3.0
Ya	mm: 37.6...41.6
Yb	mm: 49.9...62.8

Remarks:

:

Ya = Distance between VE flange and speed-control lever in idle position

Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position

Measurement point = edge of control lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FORD
Edition : 08.08.95
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/9F2400R299-2
Type number : 0 460 494 374
Customer Part-No. :

Customer-specific information
Customer : FORD

Engine : 1.8 IDI

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 022

Opening
Pressure> bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 450

Start of delivery
Prestroke mm: -
> (from BDC): -

Start of delivery block
Piston stroke mm: 0.8
> mm: +-0.02(0.05)
Outlet > : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Setting value mm: 6.00...6.40

AFB/AFB
valve > Volt: 12.0
Shutoff
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Setting value bar: 6.30...6.90
KSB/AFB
valve > Volt: 12.0
Shutoff
electromagnet>Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1750
Del. quantity cm3/
> 1000S.: 27.4...27.8
KSB/AFB
valve > Volt: 12.0
Shutoff
electromagnet>Volt: 12.0
Dispersion cm3/: 2.0
> 1000S.: (3.0)

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Residual-Delivery Setting

Speed 1/min: 530
Del. quantity cm3/
> 1000S.: 1.00...5.00
KSB/AFB
valve > Volt: 12.0
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2675
Del. quantity cm3/
> 1000S.: 8.00...14.00
KSB/AFB
valve > Volt: 12.0
Shutoff
electromagnet>Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 53.00...73.00
mind> 1000S.: 51.00
KSB/AFB
Valve > Volt: 12.0
Shutoff
electromagnet>Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250



Inj.-qty. cm<sup>3</sup>/  
difference> 1000S.: -3.5...11.5 \*  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12  
TD-travel dif.measurement

1.Speed 1/min: 1250  
TD-travel  
difference> mm: - 0.5...0.7 \*  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 400  
TD travel mm: 3.40...3.60 A  
> mm: (2.80...4.30)

KSB/AFB  
valve > Volt: -  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1000  
TD travel mm: 2.8...5.2 B  
> mm: -

KSB/AFB  
valve > Volt: -  
Shutoff  
electromagnet>Volt: 12  
3rd speed 1/min: 800  
TD travel mm: 1.80...2.60  
> mm: (1.50...2.90)

KSB/AFB  
valve > Volt: 12  
Shutoff  
electromagnet>Volt: 12  
4th speed 1/min: 1500  
TD travel mm: 6.00...6.40  
> mm: (5.70...6.70)

KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
5th speed 1/min: 2000  
TD travel mm: 8.60...9.40  
> mm: (8.30...9.70)

KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0

Supply-pump pressure characteristic:

1st speed 1/min: 750  
Supply-pump

pressure> bar: 3.90...4.50  
> bar: -

KSB/AFB  
valve > Volt: 12.0  
Shutoff

electromagnet>Volt: 12.0  
2nd speed 1/min: 1500

Supply-pump  
pressure> bar: 6.30...6.90  
> bar: -

KSB/AFB  
valve > Volt: 12.0  
Shutoff

electromagnet>Volt: 12.0  
3rd speed 1/min: 2000

Supply-pump  
pressure> bar: 7.70...8.30  
> bar: -

KSB/AFB  
valve > Volt: 12.0  
Shutoff

electromagnet>Volt: 12.0

Overflow quantity at overflow valve:

1st speed 1/min: 750  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 41.70...86.10  
quantity> cm<sup>3</sup>/10s: (26.70...101.10)

2nd speed 1/min: 2400  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 55.60...139.00  
quantity> cm<sup>3</sup>/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2950  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>: 0.00...2.00  
> 1000S.: -  
3rd speed 1/min: 2675  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>: 8.00...14.0  
> 1000S.: (6.50...15.5)  
4th speed 1/min: 2550  
KSB/AFB  
valve > Volt: 12.0

Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm3/: 18.0...26.0  
 > 1000S.: (16.0...26.0)  
 5th speed 1/min: 2400  
 KSB/AFB  
 valve > Volt: 12.0  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm3/: 25.7...27.7  
 > 1000S.: (24.7...28.7)  
 6th speed 1/min: 1750  
 KSB/AFB  
 valve > Volt: 12.0  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm3/: 27.4...27.8  
 > 1000S.: (25.9...29.3)  
 7th speed 1/min: 1000  
 KSB/AFB  
 valve > Volt: 12.0  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm3/: 26.7...29.7  
 > 1000S.: (25.9...30.5)  
 8th speed 1/min: 750  
 KSB/AFB  
 valve > Volt: 12.0  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm3/: 26.00...29.00  
 > 1000S.: (25.90...30.50)

Electr. shutoff:

1st speed 1/min: 425  
 Del. quantity cm3/: 0.00...3.00  
 > 1000S.: (0.00...3.00)  
 Shutoff  
 electromagnet>volt: -  
 KSB/AFB  
 valve > Volt: 12.0

Damper set qty.:

LFG-setting:

Idle delivery:

1st speed 1/min: 425  
 KSB/AFB  
 valve > Volt: 12.0  
 Shutoff  
 electromagnet Volt: 12.0  
 Del. quantity cm3/: 10.00...14.00  
 > 1000S.: (6.40...17.60)

High Idle:

A18

1st speed 1/mi: 590  
 KSB/AFB  
 valve > Volt: 12.0  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm3/: 7.00...11.00  
 > 1000S.: (3.40...14.60)

Rest delivery:

1st speed 1/min: 530  
 KSB/AFB  
 valve > Volt: 12.0  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm3/: 1.00...5.00  
 > 1000S.: (0.20...5.80)

Load-dependent start of delivery:  
 Inj.-qty.dif.measurement:

1st speed 1/min: 1250  
 Inj.-qty. cm3/ : -5.0...7.0 "  
 difference> 1000S.: -  
 KSB/AFB  
 valve > Volt: 12.0  
 Shutoff  
 electromagnet>Volt: 12.0  
 2nd speed 1/min: 1250  
 Inj.-qty. cm3/: 2.00...8.0 Z'  
 difference> 1000S.: -  
 KSB/AFB  
 valve > Volt: 12.0  
 Shutoff  
 electromagnet Volt: 12.0

TD-travel dif.measurement:  
 correttore anticipo iniezione (SV):  
 1st speed 1/min: 1250  
 TD-travel : -0.5...1.3 '  
 difference> mm: -  
 KSB/AFB  
 valve > Volt: 12.0  
 Shutoff  
 electromagnet>Volt: 12.0

SP press.-dif.measurement:  
 pompa di mandata (FP):  
 1st speed 1/min: 1250  
 Supply pump-  
 pressure > : - 0.1...0.3 "  
 difference> bar: -  
 KSB/AFB  
 valve > Volt: 12.0  
 Shutoff  
 electromagnet>Volt: 12.0

Part-load del.at 3rd inj.-qty.  
 terza fermo della portata

stop (EGR set)  
scarico) (ARF)  
gaz d'échappement-ARF)  
Spacing mm: 12.0

1st speed 1/min: 1200  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 11.3...12.3 \*  
> 1000S.: (9.3...14.3)

Automatic starting fuel delivery:

1st speed 1/min: 200  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 60.00...90.00  
> 1000S.: LFG=LL/VH-VL

2nd speed 1/min: 500  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 24.00...38.00  
> 1000S.: LFG=LL/VH-VL

3rd speed 1/min: 275  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 60..90 (VH/VL)  
> 1000S.: LFG=ERHÖHTER LL

4th speed 1/min: 100  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 45...75 (VH/VL)  
> 1000S.: LFG ERHÖHTER LL

Shutoff electromagnet:

Cut-in  
>min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: K1  
KF mm: 5.8...6.2  
MS mm: 1.7...1.9  
Ya mm: 31.6...35.6

Yb mm: 60.7...69.3

Remarks:

:  
:  
:  
Z = Absolute delivery

Ya = Distance between VE flange and  
speed-control lever in idle  
position  
Measurement point = edge of control  
lever on drive end

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position  
Measurement point = edge of control  
lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU
Edition : 31.07.95
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/9F2250R601-1
Type number : 0 460 494 382
Customer Part-No. :

Customer-specific information
Customer : PSA

Engine : XUD 9 BTF/L3 U6

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 022

Opening
Pressure> bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 450

Start of delivery
Prestroke mm: -
> (from BDC): -

Indicator setting
Piston stroke> mm: 0,3
Outlet> : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Charge press. hPa: 1000
Setting value mm: 9.30...9.70

Shutoff
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Charge press hPa: 1000
Setting value bar: 6.50...7.10
Shutoff
electromagnet>Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1200
Charge press. hPa: 1000
Del. quantity cm3/
> 1000S.: 53.50...54.50
Shutoff
electromagnet>Volt: 12
Dispersion cm3/: 2.0
> 1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
> 1000S.: 36.0...37.0
Shutoff
electromagnet>Volt: 12.0

Low-idle speed regulation

Speed 1/min: 440
Del. quantity cm3/
> 1000S.: 15.0...17.0
Shutoff
electromagnet>Volt: 12.0
Del. quantity cm3/: 2.0
> 1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 490
Del. quantity cm3/
> 1000S.: 8.00...9.00
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2575
Charge press hPa: 1000
Del. quantity cm3/
> 1000S.: 12.0...16.0
Shutoff
electromagnet>Volt: 12

Start:

Speed 1/min: 150

Del. quantity cm<sup>3</sup>/: 37.00...67.00  
mind> 1000S.: 37.00  
Shutoff  
electromagnet>Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 300  
Charge press hPa: 1000  
TD travel mm: 6.00...7.20  
> mm: (6.00...7.20)  
Timing valve Volt: -  
electromagnet>Volt: 12.0  
2nd speed 1/min: 2000  
Charge press hPa: 1000  
TD travel mm: 0.00...1.20  
> mm: (0.00...1.20)  
Timing valve Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
3rd speed 1/min: 750  
Charge press hPa: 1000  
TD travel mm: 7.80...8.60  
> mm: (7.50...8.90)  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
4th speed 1/min: 1250  
Charge press hPa: 1000  
TD travel mm: 9.30...9.70  
> mm: (8.80...10.20)  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
5th speed 1/min: 1750  
Charge press. hPa: 1000  
TD travel mm: 11.1...11.9  
> mm: (10.8...12.2)  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0

Supply-pump pressure characteristic:

1st speed 1/min: 300  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 5.00...5.60  
> bar: -  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12  
2nd speed 1/min: 750  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 5.70...6.30  
> bar: (5.60...6.80)

Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12  
3rd speed 1/min: 1250  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 6.50...7.10  
> bar: -  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12  
4th speed 1/min: 1750  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 7.30...7.90  
> bar: -  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 50.00...94.40  
quantity> cm<sup>3</sup>/10s: (35.00...109.4)  
2nd speed 1/min: 2150  
Charge press. hPa: 1000  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 77.70...161.10  
quantity> cm<sup>3</sup>/10s: (62.70...176.10)

Delivery-quant. and breakaway char.:

1st speed 1/min: 750  
Charge-air pressure-setting  
point> hPa: 350  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 45.0...46.0  
> 1000S.: (42.5...48.5)  
2nd speed 1/min: 2750  
Charge press. hPa: 1000  
Timing valve Volt: -  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 0.00...6.00  
> 1000S.: (0.00...6.00)  
3rd speed 1/min: 2575  
Charge press. hPa: 1000  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0

Del. quantity cm<sup>3</sup>/: 12.0...16.0  
> 1000S.: (10.0...18.00)  
4th speed 1/min: 2375  
Charge press. hPa: 1000  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 34.0...44.0  
> 1000S.: (33.0...45.0)  
5th speed 1/min: 2150  
Charge press. hPa: 1000  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 49.10...51.10  
> 1000S.: (47.90...52.30)  
6th speed 1/min: 2000  
Charge press. hPa: 1000  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 51.0...53.0  
> 1000S.: (49.8...54.2)  
7th speed 1/min: 1250  
Charge press. hPa: 1000  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 53.5...54.5  
> 1000S.: (51.8...56.2)  
8th speed 1/min: 500  
Charge press. hPa: 1000  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 46.80...49.80  
> 1000S.: (45.30...51.30)  
9th speed 1/min: 500  
Charge press. hPa: -  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 36.00...37.00  
> 1000S.: (33.50...39.50)

Mech. shutoff:

1st speed 1/min: 2000  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
> 1000S.: (0.00...3.00)  
Shutoff  
electromagnet>volt: 12.0  
Timing valve Volt: -

Electr. shutoff:

1st speed 1/min: 400  
Charge press. hPa: -

Del. quantity cm<sup>3</sup>/: 0.00...3.00  
> 1000S.: (0.00...3.00)  
Shutoff  
electromagnet>volt: -  
Timing valve Volt: -

Damper set qty.:

LF6-setting:

Idle delivery:

1st speed 1/min: 440  
Timing valve Volt: -  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 15.0...17.0  
> 1000S.: (12.0...20.0)

High Idle:

1st speed 1/mi: 490  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 15.0...17.0  
> 1000S.: (12.0...20.0)

Rest delivery:

1st speed 1/min: 490  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 8.0...9.0  
> 1000S.: (6.5...10.5)

Part-load del.at 3rd inj.-qty.  
terza fermo della portata  
stop (EGR set)  
scarico) (ARF)  
gaz d'échappement-ARF)  
Spacing mm: 12.0

1st speed 1/min: 1250  
Charge press. hPa: 1000  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 24.00...26.00  
> 1000S.: (21.00...29.00)  
2nd speed 1/min: 500  
Charge press. hPa: 1000  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 9.0...11.0  
> 1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 200  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 50.00...56.00  
> 1000S.: (45.50...60.50)

2nd speed 1/min: 380  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 25.00...45.00  
> 1000S.: (25.00...45.00)

4th speed 1/min: 150  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 37.00...67.00  
> 1000S.: (37.00...67.00)

Shutoff electromagnet:

Cut-in  
>min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.2...3.4
KF	mm: KOT
MS	mm: 1.1...1.5
XK	mm: ARF 3 =1,9V
XL	mm: ARF 4 =1,0V
Ya	mm: 25.8...29.8
Yb	mm: 36.1...50.1

Ajustement Potentiometer:

Angle for  
pot. > °: 35.0  
Supply voltage  
pot. > volt: 5.0

Remarks:

⋮

Ya = Distance between VE flange and  
speed-control lever in idle  
position  
Measurement point = edge of control  
lever on drive end

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position  
Measurement point = edge of control

Lever on distributor-head end

Permissible port/port scatter with  
stop test, electrical = max. 5.0  
ccm/1000 S.

Permissible port/port scatter with  
stop test, mechanical = max. 5.0  
ccm/1000 S.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU
Edition : 04.08.95
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/9F2250R513-2
Type number : 0 460 494 383
Customer Part-No. :

Customer-specific information
Customer : PSA

Engine : XUD 9 TF-Y

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 022

Opening
Pressure> bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 450

Start of delivery
Prestroke mm: -
> (from BDC): -

Indicator setting
Piston stroke> mm: 0.3
Outlet> : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Charge press. hPa: 1000
Setting value mm: 3.40...3.80

Shutoff
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Charge press hPa: 1000
Setting value bar: 5.30...5.90
Shutoff
electromagnet>Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250
Charge press. hPa: 1000
Del. quantity cm3/
> 1000s.: 53.50...54.50
Shutoff
electromagnet>Volt: 12
Dispersion cm3/: 2.0
> 1000s.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
> 1000s.: 36.50...37.50
Shutoff
electromagnet>Volt: 12

Residual-Delivery Setting

Speed 1/min: 490
Del. quantity cm3/
> 1000s.: 8.00...9.00
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2575
Charge press hPa: 1000
Del. quantity cm3/
> 1000s.: 12.00...16.00
Shutoff
electromagnet>Volt: 12

Start:

Speed 1/min: 150
Del. quantity cm3/: 37.00...67.00
mind> 1000s.: 37.00
Shutoff
electromagnet>Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Inj.-qty. cm3/



difference> 1000S.: -11.0...15.0 \*  
Shutoff  
electromagnet>Volt: 12  
TD-travel dif.measurement

1.Speed 1/min: 1250  
TD-travel  
difference> mm: -0.9...1.1 \*  
Shutoff  
electromagnet>Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000  
Charge press hPa: 1000  
TD travel mm: 6.10...6.90  
> mm: (5.80...7.20)

Shutoff  
electromagnet>Volt: 12  
3rd speed 1/min: 1250  
Charge press hPa: 1000  
TD travel mm: 3.40...3.80  
> mm: (2.90...4.30)

Shutoff  
electromagnet>Volt: 12  
4th speed 1/min: 750  
Charge press hPa: 1000  
TD travel mm: 1.10...1.90  
> mm: (0.80...2.20)

Shutoff  
electromagnet>Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 750  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 4.00...4.60  
> bar: -

Shutoff  
electromagnet>Volt: 12  
2nd speed 1/min: 1250  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 5.30...5.90  
> bar: -

Shutoff  
electromagnet>Volt: 12  
3rd speed 1/min: 2000  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 7.20...7.80  
> bar: -

Shutoff  
electromagnet>Volt: 12

Overlow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12  
Overflow : 41.70...86.10  
quantity> cm<sup>3</sup>/10s: (26.70...101.10)  
2nd speed 1/min: 2150  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12  
Overflow : 55.60...139.00  
quantity> cm<sup>3</sup>/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 750  
Charge-air pressure-setting  
point> hPa: 350  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 45.50...46.50  
> 1000S.: (43.00...49.00)

2nd speed 1/min: 2750  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...6.00  
> 1000S.: (0.00...6.00)

5th speed 1/min: 2575  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 12.00...16.00  
> 1000S.: (10.00...18.00)

8th speed 1/min: 2375  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 34.00...44.00  
> 1000S.: (33.00...45.00)

9th speed 1/min: 2150  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 49.10...51.10  
> 1000S.: (47.90...52.30)

10th speed 1/min: 2000  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 51.00...53.00  
> 1000S.: (49.80...54.20)

12th speed 1/min: 1250  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 53.50...54.50  
> 1000S.: (51.8...56.2)

18th speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 36.50...37.50  
> 1000S.: (34.00...40.00)  
20th speed 1/min: 500  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 46.80...49.80  
> 1000S.: (45.30...51.30)

Electr. shutoff:

1st speed 1/min: 440  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
> 1000S.: (0.00...3.00)  
Shutoff  
electromagnet>volt: -

Damper set qty.:

LFG-setting:

Idle delivery:

1st speed 1/min: 440  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 15.00...17.00  
> 1000S.: (12.00...20.00)

High Idle:

1st speed 1/mi: 490  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 15.00...17.00  
> 1000S.: (12.00...20.00)

Rest delivery:

1st speed 1/min: 490  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 8.00...9.00  
> 1000S.: (6.50...10.50)

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1250  
Inj.-qty. cm<sup>3</sup>/ : 2.0...11.0 Z"  
difference> 1000S.: -  
Shutoff  
electromagnet>Volt: 12

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):  
1st speed 1/min: 1250  
TD-travel : -1.40...3.0 "  
difference> mm: -  
Shutoff  
electromagnet>Volt: 12

SP press.-dif.measurement:  
pompa di mandata (FP):  
1st speed 1/min: 1250  
Supply pump-  
pressure > : -0.1...0.3 "  
difference> bar: -  
Shutoff  
electromagnet>Volt: 12

Part-load del.at 3rd inj.-qty.  
terza fermo della portata  
stop (EGR set)  
scarico) (ARF)  
gaz d'échappement-ARF)  
Spacing mm: 12.0

1st speed 1/min: 1250  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 16.8...18.8\*\*  
> 1000S.: (13.80...21.8)

Automatic starting fuel delivery:

2nd speed 1/min: 380  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 25.00...45.00  
> 1000S.: (25.00...45.00)

3rd speed 1/min: 200  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 50.00...56.00  
> 1000S.: (45.50...60.50)

4th speed 1/min: 150  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 37.00...67.00  
> 1000S.: (37.00...67.00)

Shutoff electromagnet:

Cut-in  
>min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.2...3.4
KF	mm: KOT
MS	mm: 1.1...1.5
XK	mm: A=0.8...3.0
XL	mm: MIKROSCH.
Ya	mm: 28.8...32.8
Yb	mm: 69.2...80.8

Remarks:

⋮

Ya = Distance between VE flange and speed-control lever in idle position

Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position

Measurement point = edge of control lever on distributor-head end

Z = Absolute delivery

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU  
Edition : 04.08.95  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/9F2250R513-3  
Type number : 0 460 494 384  
Customer Part-No. :

Customer-specific information  
Customer : PSA

Engine : XUD 9 TF-Y

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return>temp. > °C  
with>thermometer> : 40.00...48.00  
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly> : 1 688 901 022

Opening  
Pressure> bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall>thickness : 2.00  
x Length> mm: 450

Start of delivery  
Prestroke mm: -  
> (from BDC): -

Indicator setting  
Piston stroke> mm: 0.3  
Outlet> : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250  
Charge press. hPa: 1000  
Setting value mm: 3.40...3.80

Shutoff  
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1250  
Charge press hPa: 1000  
Setting value bar: 5.30...5.90  
Shutoff  
electromagnet>Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 53.50...54.50  
Shutoff  
electromagnet>Volt: 12  
Dispersion cm<sup>3</sup>/: 2.0  
> 1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 36.50...37.50  
Shutoff  
electromagnet>Volt: 12

Residual-Delivery Setting

Speed 1/min: 490  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 8.00...9.00  
Shutoff  
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2575  
Charge press hPa: 1000  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 12.00...16.00  
Shutoff  
electromagnet>Volt: 12

Start:

Speed 1/min: 150  
Del. quantity cm<sup>3</sup>/: 37.00...67.00  
mind> 1000S.: 37.00  
Shutoff  
electromagnet>Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1250  
Inj.-qty. cm<sup>3</sup>/

difference> 1000S.: -11.0...15.0 \*  
Shutoff  
electromagnet>Volt: 12  
TD-travel dif.measurement  
  
1.Speed 1/min: 1250  
TD-travel  
difference> mm: -0.9...1.1 \*  
Shutoff  
electromagnet>Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000  
Charge press hPa: 1000  
TD travel mm: 6.10...6.90  
> mm: (5.80...7.20)  
Shutoff  
electromagnet>Volt: 12  
3rd speed 1/min: 1250  
Charge press hPa: 1000  
TD travel mm: 3.40...3.80  
> mm: (2.90...4.30)  
Shutoff  
electromagnet>Volt: 12  
4th speed 1/min: 750  
Charge press hPa: 1000  
TD travel mm: 1.10...1.90  
> mm: (0.80...2.20)  
Shutoff  
electromagnet>Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 750  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 4.00...4.60  
> bar: -  
Shutoff  
electromagnet>Volt: 12  
2nd speed 1/min: 1250  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 5.30...5.90  
> bar: -  
Shutoff  
electromagnet>Volt: 12  
3rd speed 1/min: 2000  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 7.20...7.80  
> bar: -  
Shutoff  
electromagnet>Volt: 12

Overlow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12  
Overflow : 41.70...86.10  
quantity> cm<sup>3</sup>/10s: (26.70...101.10)  
2nd speed 1/min: 2150  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12  
Overflow : 55.60...139.00  
quantity> cm<sup>3</sup>/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 750  
Charge-air pressure-setting  
point> hPa: 350  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 45.50...46.50  
> 1000S.: (43.00...49.00)  
2nd speed 1/min: 2750  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...6.00  
> 1000S.: (0.00...6.00)  
5th speed 1/min: 2575  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 12.00...16.00  
> 1000S.: (10.00...18.00)  
8th speed 1/min: 2375  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 34.00...44.00  
> 1000S.: (33.00...45.00)  
9th speed 1/min: 2150  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 49.10...51.10  
> 1000S.: (47.90...52.30)  
10th speed 1/min: 2000  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 51.00...53.00  
> 1000S.: (49.80...54.20)  
12th speed 1/min: 1250  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 53.50...54.50  
> 1000S.: (51.8...56.2)

18th speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 36.50...37.50  
> 1000S.: (34.00...40.00)  
20th speed 1/min: 500  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 46.80...49.80  
> 1000S.: (45.30...51.30)

Electr. shutoff:

1st speed 1/min: 440  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
> 1000S.: (0.00...3.00)  
Shutoff  
electromagnet>volt: -

Damper set qty.:

LFG-setting:

Idle delivery:

1st speed 1/min: 440  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 15.00...17.00  
> 1000S.: (12.00...20.00)

High Idle:

1st speed 1/mi: 490  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 15.00...17.00  
> 1000S.: (12.00...20.00)

Rest delivery:

1st speed 1/min: 490  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 8.00...9.00  
> 1000S.: (6.50...10.50)

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1250  
Inj.-qty. cm<sup>3</sup>/ : 2.0...11.0 Z"  
difference> 1000S.: -  
Shutoff  
electromagnet>Volt: 12

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):  
1st speed 1/min: 1250  
TD-travel : -1.40...3.0 "  
difference> mm: -  
Shutoff  
electromagnet>Volt: 12

SP press.-dif.measurement:  
pompa di mandata (FP):  
1st speed 1/min: 1250  
Supply pump-  
pressure > : -0.1...0.3 "  
difference> bar: -  
Shutoff  
electromagnet>Volt: 12

Part-load del.at 3rd inj.-qty.  
terza fermo della portata  
stop (EGR set)  
scarico) (ARF)  
gaz d'échappement-ARF)  
Spacing mm: 12.0

1st speed 1/min: 1250  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 22.8...24.8\*\*  
> 1000S.: (19.80...27.8)

Automatic starting fuel delivery:

2nd speed 1/min: 380  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 25.00...45.00  
> 1000S.: (25.00...45.00)

3rd speed 1/min: 200  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 50.00...56.00  
> 1000S.: (45.50...60.50)

4th speed 1/min: 150  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 37.00...67.00  
> 1000S.: (37.00...67.00)

Shutoff electromagnet:

Cut-in  
>min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.2...3.4
KF	mm: KOT
MS	mm: 1.1...1.5
XK	mm: A=0.8...3.0
XL	mm: MIKROSCH.
Ya	mm: 28.8...32.8
Yb	mm: 69.2...80.8

Remarks:

:  
:

Ya = Distance between VE flange and speed-control lever in idle position

Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position

Measurement point = edge of control lever on distributor-head end

Z = Absolute delivery

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU
Edition : 04.08.95
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/9F2150R281-2
Type number : 0 460 494 385
Customer Part-No. :

Customer-specific information
Customer : PSA

Engine : XUD11 ATE-Y BVA

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 022

Opening
Pressure> bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 450

Start of delivery
Prestroke mm: -
> (from BDC): -

Indicator setting
Piston stroke> mm: 0,3
Outlet> : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Charge press. hPa: 1000
Setting value mm: 2.80...3.00

Shutoff
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Charge press hPa: 1000
Setting value bar: 5.00...5.60
Shutoff
electromagnet>Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250
Charge press. hPa: 1000
Del. quantity cm3/
> 1000S.: 61.00...62.00
Shutoff
electromagnet>Volt: 12
Dispersion cm3/: 2.0
> 1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
> 1000S.: 42.0...43.0
Shutoff
electromagnet>Volt: 12.0

Residual-Delivery Setting

Speed 1/min: 550
Del. quantity cm3/
> 1000S.: 2.50...3.50
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2250
Charge press hPa: 1000
Del. quantity cm3/
> 1000S.: 49.0...55.0
Shutoff
electromagnet>Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 70.00...80.00
mind> 1000S.: 68.00
Shutoff
electromagnet>Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:



1st speed 1/min: 1000  
Charge press hPa: 1000  
TD travel mm: 1.30...1.90  
> mm: (0.90...2.30)  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1250  
Charge press hPa: 1000  
TD travel mm: 2.80...3.00  
> mm: (2.20...3.60)  
Shutoff  
electromagnet>Volt: 12.0  
3rd speed 1/min: 2000  
Charge press hPa: 1000  
TD travel mm: 6.60...7.20  
> mm: (6.20...7.60)  
Shutoff  
electromagnet>Volt: 12.0

Supply-pump pressure characteristic:

1st speed 1/min: 1000  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 4.30...4.90  
> bar: -

Shutoff  
electromagnet>Volt: 12  
2nd speed 1/min: 1250  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 5.00...5.60  
> bar: -

Shutoff  
electromagnet>Volt: 12  
3rd speed 1/min: 2000  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 7.10...7.70  
> bar: -

Shutoff  
electromagnet>Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 41.60...83.30  
quantity> cm<sup>3</sup>/10s: (26.60...98.3)  
2nd speed 1/min: 2000  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 55.50...138.80  
quantity> cm<sup>3</sup>/10s: (40.50...153.80)

Delivery-quant. and breakaway char.:

1st speed 1/min: 750

Charge-air pressure-setting  
point> hPa: 350  
LDA-stroke mm: 5.9  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 56.0...57.0  
> 1000S.: (53.5...59.5)  
2nd speed 1/min: 2700  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 5.0...11.0  
> 1000S.: (4.00...12.0)  
3rd speed 1/min: 2400  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 33.5...40.5  
> 1000S.: (33.0...41.00)  
4th speed 1/min: 2250  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 49.0...55.0  
> 1000S.: (48.0...56.0)  
5th speed 1/min: 2000  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 56.00...59.00  
> 1000S.: (55.20...59.70)  
6th speed 1/min: 1250  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 61.0...62.0  
> 1000S.: (59.2...63.8)  
7th speed 1/min: 1000  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 60.5...63.5  
> 1000S.: (59.5...64.5)  
8th speed 1/min: 500  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 59.00...62.00  
> 1000S.: (58.00...63.00)  
9th speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 42.00...43.00  
> 1000S.: (40.20...44.80)

Mech. shutoff:

1st speed 1/min: 2000

Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
> 1000S.: (0.00...3.00)

Shutoff  
electromagnet>volt: 12.0

Electr. shutoff:

1st speed 1/min: 325  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
> 1000S.: (0.00...3.00)

Shutoff  
electromagnet>volt: -

Damper set qty.:

LFG-setting:

Idle delivery:

1st speed 1/min: 325  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 12.0...14.0  
> 1000S.: (10.0...16.0)

2nd speed 1/min: 375  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 5.00...11.00  
> 1000S.: -

High Idle:

1st speed 1/mi: 450  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 11.0...13.0  
> 1000S.: (9.0...15.0)

Rest delivery:

1st speed 1/min: 550  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 2.5...3.5  
> 1000S.: (0.5...5.5)

Part-load del.at 3rd inj.-qty.  
terza fermo della portata  
stop (EGR set)  
scarico) (ARF)  
gaz d'échappement-ARF)  
Spacing mm: 12.0

1st speed 1/min: 1500  
Charge press. hPa: 1000  
KSB/AFB  
valve > Volt: ARF3  
Shutoff  
electromagnet>Volt: 12.0

Del. quantity cm<sup>3</sup>/: 24.5...25.5  
> 1000S.: (22.0...28.0)

2nd speed 1/min: 500  
Charge press. hPa: 1000  
KSB/AFB

valve > Volt: ARF4  
Timing valve Volt: 12MM

Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 13.5...21.5  
> 1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 200  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 76.0...78.0 V  
> 1000S.: (74.5...79.5)

2nd speed 1/min: 325  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 37.00...44.00  
> 1000S.: -

4th speed 1/min: 100  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 70.00...80.00  
> 1000S.: -

Shutoff electromagnet:

Cut-in  
>min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.2...3.4
KF	mm: 5.2...5.6
MS	mm: 0.9...1.3
XK	mm: ARF3= 2.9V
XL	mm: ARF4= 1,9V
Ya	mm: 34.3...38.3
Yb	mm: 67.1...81.7

Ajustement Potentiometer:

Angle for  
pot. > °: 25  
Supply voltage  
pot. > volt: 5,0

Remarks:

Ya = Distance between VE flange and

speed-control lever in idle  
position  
Measurement point = edge of control  
lever on drive end

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position  
Measurement point = edge of control  
lever on distributor-head end

Starting delivery check  
V = Speed-control lever in full-load  
position

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU
Edition : 04.08.95
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/9F2150R474-2
Type number : 0 460 494 386
Customer Part-No. :

Customer-specific information
Customer : PSA

Engine : XUD11 ATE-L BVA

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 022

Opening
Pressure> bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 450

Start of delivery
Prestroke mm: -
> (from BDC): -

Indicator setting
Piston stroke> mm: 0,3
Outlet> : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Charge press. hPa: 1000
Setting value mm: 2.30...2.70

Shutoff
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Charge press hPa: 1000
Setting value bar: 5.00...5.60
Shutoff
electromagnet>Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250
Charge press. hPa: 1000
Del. quantity cm3/
> 1000S.: 61.00...62.00
Shutoff
electromagnet>Volt: 12
Dispersion cm3/: 2.0
> 1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
> 1000S.: 42.5...43.5
Shutoff
electromagnet>Volt: 12.0

Residual-Delivery Setting

Speed 1/min: 550
Del. quantity cm3/
> 1000S.: 2.50...3.50
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2250
Charge press hPa: 1000
Del. quantity cm3/
> 1000S.: 49.0...55.0
Shutoff
electromagnet>Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 70.0...80.0 V
mind> 1000S.: 68.00
Shutoff
electromagnet>Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000  
 Charge press hPa: 1000  
 TD travel mm: 0.90...1.70  
 > mm: (0.60...2.00)  
 electromagnet>Volt: 12.0  
 2nd speed 1/min: 1250  
 Charge press hPa: 1000  
 TD travel mm: 2.30...2.70  
 > mm: (1.80...3.20)  
 Shutoff  
 electromagnet>Volt: 12.0  
 3rd speed 1/min: 2000  
 Charge press hPa: 1000  
 TD travel mm: 5.50...6.30  
 > mm: (5.20...6.60)  
 Shutoff  
 electromagnet>Volt: 12.0

Supply-pump pressure characteristic:

1st speed 1/min: 1000  
 Charge press. hPa: 1000  
 Supply-pump pressure> bar: 4.30...4.90  
 > bar: -  
 Shutoff  
 electromagnet>Volt: 12  
 2nd speed 1/min: 1250  
 Charge press. hPa: 1000  
 Supply-pump pressure> bar: 5.00...5.60  
 > bar: -  
 Shutoff  
 electromagnet>Volt: 12  
 3rd speed 1/min: 2000  
 Charge press. hPa: 1000  
 Supply-pump pressure> bar: 7.10...7.70  
 > bar: -  
 Shutoff  
 electromagnet>Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
 Charge press. hPa: -  
 Shutoff  
 electromagnet>Volt: 12.0  
 Overflow : 41.60...83.30  
 quantity> cm<sup>3</sup>/10s: (26.60...98.3)  
 2nd speed 1/min: 2000  
 Shutoff  
 electromagnet>Volt: 12.0  
 Overflow : 55.50...138.80  
 quantity> cm<sup>3</sup>/10s: (40.50...153.80)

Delivery-quant. and breakaway char.:

1st speed 1/min: 750

Charge-air pressure-setting point> hPa: 400  
 LDA-stroke mm: 5.9  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 56.0...57.0  
 > 1000s.: (53.5...59.5)  
 2nd speed 1/min: 2700  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 5.0...11.0  
 > 1000s.: (4.00...12.0)  
 3rd speed 1/min: 2400  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 33.5...40.5  
 > 1000s.: (33.0...41.00)  
 4th speed 1/min: 2250  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 49.0...55.0  
 > 1000s.: (48.0...56.0)  
 5th speed 1/min: 2000  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 55.00...58.00  
 > 1000s.: (54.20...58.80)  
 6th speed 1/min: 1250  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 61.0...62.0  
 > 1000s.: (59.2...63.8)  
 7th speed 1/min: 1000  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 60.5...63.5  
 > 1000s.: (59.5...64.5)  
 8th speed 1/min: 500  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 60.00...63.00  
 > 1000s.: (59.00...64.00)  
 9th speed 1/min: 500  
 Charge press. hPa: -  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 42.50...43.50  
 > 1000s.: (40.70...45.30)

Mech. shutoff:

1st speed 1/min: 2000

Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
> 1000S.: (0.00...3.00)  
Shutoff  
electromagnet>volt: 12.0

Electr. shutoff:

1st speed 1/min: 325  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
> 1000S.: (0.00...3.00)  
Shutoff  
electromagnet>volt: -

Damper set qty.:

LFG-setting:

Idle delivery:

1st speed 1/min: 325  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 12.0...14.0  
> 1000S.: (10.0...16.0)  
2nd speed 1/min: 375  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 5.00...11.00  
> 1000S.: -

High Idle:

1st speed 1/mi: 450  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 11.0...13.0  
> 1000S.: (9.0...15.0)

Rest delivery:

1st speed 1/min: 550  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 2.5...3.5  
> 1000S.: (0.5...5.5)

Part-load del. at 3rd inj.-qty.  
terza fermo della portata  
stop (EGR set)  
scarico) (ARF)  
gaz d'échappement-ARF)  
Spacing mm: 12.0

1st speed 1/min: 1500  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 25.0...26.0  
> 1000S.: (22.5...28.5)

Automatic starting fuel delivery:

1st speed 1/min: 200  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 76.0...78.0 V  
> 1000S.: (74.5...79.5)

2nd speed 1/min: 325  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 37.00...44.00  
> 1000S.: -

4th speed 1/min: 100  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 70.00...80.00  
> 1000S.: -

Shutoff electromagnet:

Cut-in  
>min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.2...3.4
KF	mm: 5.2...5.6
MS	mm: 0.9...1.3
XK	mm: MIKROSCH.
XL	mm: A=0.8...3.0
Ya	mm: 34.3...38.3
Yb	mm: 73.7...88.3

Remarks:

:  
:  
Ya = Distance between VE flange and  
speed-control lever in idle  
position  
Measurement point = edge of control  
lever on drive end

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position  
Measurement point = edge of control  
lever on distributor-head end

Starting delivery check  
V = Speed-control lever in full-load  
position

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU  
 Edition : 04.08.95  
 replaces : -  
 Calibrating oil : ISO-4113  
  
 Injection pump : VE4/9F2250R472-2  
 Type number : 0 460 494 387  
 Customer Part-No. :

Customer-specific information  
 Customer : PSA

Engine : XUD 9 TE-Y

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
 return>temp. > °C  
 with>thermometer> : 40.00...48.00  
 Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
 assembly> : 1 688 901 022

Opening  
 Pressure> bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
 x Wall>thickness : 2.00  
 x Length> mm: 450

Start of delivery  
 Prestroke mm: -  
 > (from BDC): -

Indicator setting  
 Piston stroke> mm: 0,3  
 Outlet> : A

Injection-pump setting values  
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500  
 Charge press. hPa: 1000  
 Setting value mm: 3.90...4.30

Shutoff  
 electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1500  
 Charge press hPa: 1000  
 Setting value bar: 5.40...6.00  
 Shutoff  
 electromagnet>Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250  
 Charge press. hPa: 1000  
 Del. quantity cm3/  
 > 1000S.: 53.50...54.50  
 Shutoff  
 electromagnet>Volt: 12  
 Dispersion cm3/: 2.0  
 > 1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500  
 Del. quantity cm3/  
 > 1000S.: 36.5...37.5  
 Shutoff  
 electromagnet>Volt: 12.0

Low-idle speed regulation

Speed 1/min: 440  
 Del. quantity cm3/  
 > 1000S.: 15.0...17.0  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm3/: 2.0  
 > 1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 490  
 Del. quantity cm3/  
 > 1000S.: 8.00...9.00  
 Shutoff  
 electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2575  
 Charge press hPa: 1000  
 Del. quantity cm3/  
 > 1000S.: 12.0...16.0  
 Shutoff  
 electromagnet>Volt: 12

Start:

Speed 1/min: 150

Del. quantity cm<sup>3</sup>/: 37.00...67.00  
mind> 1000S.: 37.00  
Shutoff  
electromagnet>Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1500  
Charge press hPa: -  
Inj.-qty. cm<sup>3</sup>/  
difference> 1000S.: 30.5...39.5 Z\*  
Shutoff  
electromagnet>Volt: 12.0  
TD-travel dif.measurement

1.Speed 1/min: 1500  
Charge press hPa: -  
TD-travel  
difference> mm: -2.5...2.7 \*  
Shutoff  
electromagnet>Volt: 12.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 900  
Charge press hPa: 1000  
TD travel mm: 0.80...1.60  
> mm: (0.50...1.90)  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1500  
Charge press hPa: 1000  
TD travel mm: 3.90...4.30  
> mm: (3.40...4.80)  
Shutoff  
electromagnet>Volt: 12.0  
3rd speed 1/min: 2000  
Charge press hPa: 1000  
TD travel mm: 6.10...6.90  
> mm: (5.80...7.20)  
Shutoff  
electromagnet>Volt: 12.0

Supply-pump pressure characteristic:

1st speed 1/min: 900  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 3.90...4.50  
> bar: -  
Shutoff  
electromagnet>Volt: 12  
2nd speed 1/min: 1500  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 5.40...6.00  
> bar: -

Shutoff  
electromagnet>Volt: 12  
3rd speed 1/min: 2000  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 6.50...7.10  
> bar: -  
Shutoff  
electromagnet>Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 41.60...83.30  
quantity> cm<sup>3</sup>/10s: (26.60...98.3)  
2nd speed 1/min: 2150  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 55.50...138.80  
quantity> cm<sup>3</sup>/10s: (40.50...153.80)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 750  
Charge-air pressure-setting  
point> hPa: 350  
LDA-stroke mm: 5.9  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 45.5...46.5  
> 1000S.: (43.0...49.0)  
2nd speed 1/min: 2750  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 0.00...6.00  
> 1000S.: (0.00...6.00)  
3rd speed 1/min: 2575  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 12.0...16.0  
> 1000S.: (10.0...18.00)  
4th speed 1/min: 2375  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 35.0...44.0  
> 1000S.: (33.0...45.0)  
5th speed 1/min: 2150  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 49.10...51.10  
> 1000S.: (47.90...52.30)



6th speed 1/min: 2000  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 51.0...53.0  
> 1000S.: (49.8...54.2)  
7th speed 1/min: 1250  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 53.5...54.5  
> 1000S.: (51.8...56.2)  
8th speed 1/min: 500  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 46.80...49.80  
> 1000S.: (45.30...51.30)  
9th speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 36.50...37.50  
> 1000S.: (34.00...40.00)

Mech. shutoff:

1st speed 1/min: 2000  
Charge press. hPa: 1000  
Del. quantity cm3/: 0.00...3.00  
> 1000S.: (0.00...3.00)  
Shutoff  
electromagnet>volt: 12.0

Electr. shutoff:

1st speed 1/min: 400  
Del. quantity cm3/: 0.00...3.00  
> 1000S.: (0.00...3.00)  
Shutoff  
electromagnet>volt: -

Damper set qty.:

LFG-setting:

Idle delivery:

1st speed 1/min: 440  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm3/: 15.0...17.0  
> 1000S.: (12.0...20.0)

High Idle:

1st speed 1/mi: 490  
Shutoff  
electromagnet>Volt: 12.0

Del. quantity cm3/: 15.0...17.0  
> 1000S.: (12.0...20.0)

Rest delivery:

1st speed 1/min: 490  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 8.0...9.0  
> 1000S.: (6.5...10.5)

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1500  
Charge press. hPa: -  
Inj.-qty. cm3/ : 2.0...8.0 Z"  
difference> 1000S.: -  
Shutoff  
electromagnet>Volt: 12.0

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):  
1st speed 1/min: 1500  
Charge press. hPa: -  
TD-travel : 0.2...1.8 "  
difference> mm: -  
Shutoff  
electromagnet>Volt: 12.0

SP press.-dif.measurement:  
pompa di mandata (FP):  
1st speed 1/min: 1500  
Charge press. hPa: -  
Supply pump-  
pressure > : 3.8...5.2 "  
difference> bar: -  
Shutoff  
electromagnet>Volt: 12.0

Automatic starting fuel delivery:

1st speed 1/min: 200  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 50.00...56.00  
> 1000S.: -

2nd speed 1/min: 380  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 25.00...45.00  
> 1000S.: (25.00...45.00)

4th speed 1/min: 150  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 37.00...67.00  
> 1000S.: (37.00...67.00)

Shutoff electromagnet:

Cut-in

>min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.2...3.4
KF	mm: KOT
MS	mm: 1.1...1.5
Ya	mm: 28.8...32.8
Yb	mm: 68.0...82.0

Remarks:

:  
:  
:

Ya = Distance between VE flange and speed-control lever in idle position  
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position  
Measurement point = edge of control lever on distributor-head end

Z = Absolute delivery

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU  
Edition : 04.08.95  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/9F2250R445-4  
Type number : 0 460 494 388  
Customer Part-No. :

Customer-specific information  
Customer : PSA

Engine : XUD 9 TE-L

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return>temp. > °C  
with>thermometer> : 40.00...48.00  
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly> : 1 688 901 022

Opening  
Pressure> bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall>thickness : 2.00  
x Length> mm: 450

Start of delivery  
Prestroke mm: -  
> (from BDC): -

Indicator setting  
Piston stroke> mm: 0,3  
Outlet> : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500  
Charge press. hPa: 1000  
Setting value mm: 3.90...4.30

Shutoff  
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1500  
Charge press hPa: 1000  
Setting value bar: 5.40...6.00  
Shutoff  
electromagnet>Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250  
Charge press. hPa: 1000  
Del. quantity cm3/  
> 1000S.: 54.00...55.00  
Shutoff  
electromagnet>Volt: 12  
Dispersion cm3/: 2.0  
> 1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500  
Del. quantity cm3/  
> 1000S.: 36.5...37.5  
Shutoff  
electromagnet>Volt: 12.0

Low-idle speed regulation

Speed 1/min: 440  
Del. quantity cm3/  
> 1000S.: 15.0...17.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 2.0  
> 1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 490  
Del. quantity cm3/  
> 1000S.: 8.00...9.00  
Shutoff  
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2575  
Charge press hPa: 1000  
Del. quantity cm3/  
> 1000S.: 12.0...16.0  
Shutoff  
electromagnet>Volt: 12

Start:

Speed 1/min: 150

Del. quantity cm<sup>3</sup>/: 37.00...67.00  
mind> 1000S.: 37.00  
Shutoff  
electromagnet>Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 900  
Charge press hPa: 1000  
TD travel mm: 0.80...1.60  
> mm: (0.50...1.90)  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1500  
Charge press hPa: 1000  
TD travel mm: 3.90...4.30  
> mm: (3.40...4.80)  
Shutoff  
electromagnet>Volt: 12.0  
3rd speed 1/min: 2000  
Charge press hPa: 1000  
TD travel mm: 6.10...6.90  
> mm: (5.80...7.20)  
Shutoff  
electromagnet>Volt: 12.0

Supply-pump pressure characteristic:

1st speed 1/min: 900  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 3.90...4.50  
> bar: -  
Shutoff  
electromagnet>Volt: 12  
2nd speed 1/min: 1500  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 5.40...6.00  
> bar: -  
Shutoff  
electromagnet>Volt: 12  
3rd speed 1/min: 2000  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 6.50...7.10  
> bar: -  
Shutoff  
electromagnet>Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 41.60...83.30  
quantity> cm<sup>3</sup>/10s: (26.60...98.3)

2nd speed 1/min: 2150  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 55.50...138.80  
quantity> cm<sup>3</sup>/10s: (40.50...153.80)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 750  
Charge-air pressure-setting  
point> hPa: 350  
LDA-stroke mm: 5.9  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 45.5...46.5  
> 1000S.: (43.0...49.0)  
2nd speed 1/min: 2750  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 0.00...6.00  
> 1000S.: (0.00...6.00)  
3rd speed 1/min: 2575  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 12.0...16.0  
> 1000S.: (10.0...18.00)  
4th speed 1/min: 2375  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 34.0...44.0  
> 1000S.: (33.0...45.0)  
5th speed 1/min: 2150  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 49.10...51.10  
> 1000S.: (47.90...52.30)  
6th speed 1/min: 2000  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 51.0...53.0  
> 1000S.: (49.8...54.2)  
7th speed 1/min: 1250  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 54.0...55.0  
> 1000S.: (52.3...56.7)  
8th speed 1/min: 500  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 46.80...49.80  
> 1000S.: (45.30...51.30)

9th speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 36.50...37.50  
> 1000S.: (34.00...40.00)

Mech. shutoff:

1st speed 1/min: 2000  
Charge press. hPa: 1000  
Del. quantity cm3/: 0.00...3.00  
> 1000S.: (0.00...3.00)

Shutoff  
electromagnet>volt: 12.0

Electr. shutoff:

1st speed 1/min: 400  
Del. quantity cm3/: 0.00...3.00  
> 1000S.: (0.00...3.00)

Shutoff  
electromagnet>volt: -

Damper set qty.:

LFG-setting:

Idle delivery:

1st speed 1/min: 440  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm3/: 15.0...17.0  
> 1000S.: (12.0...20.0)

High Idle:

1st speed 1/mi: 490  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 15.0...17.0  
> 1000S.: (12.0...20.0)

Rest delivery:

1st speed 1/min: 490  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 8.0...9.0  
> 1000S.: (6.5...10.5)

Automatic starting fuel delivery:

1st speed 1/min: 200  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 45.50...60.50  
> 1000S.: -

2nd speed 1/min: 380  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 25.00...45.00  
> 1000S.: (25.00...45.00)

4th speed 1/min: 150  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 37.00...67.00  
> 1000S.: (37.00...67.00)

Shutoff electromagnet:

Cut-in  
>min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.2...3.4
KF	mm: KOT
MS	mm: 1.1...1.5
Ya	mm: 25.8...29.8
Yb	mm: 68.0...82.0

Remarks:

:  
:  
Ya = Distance between VE flange and  
speed-control lever in idle  
position  
Measurement point = edge of control  
lever on drive end

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position  
Measurement point = edge of control  
lever on distributor-head end

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA  
Edition : 01.08.95  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/9F2100R466-1  
Type number : 0 460 494 389  
Customer Part-No. :

Customer-specific information  
Customer : FIAT-AUTO

Engine : M718 NT19.L

Power KW: 66

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil  
return>temp. > °C  
with>thermometer> : 40.00...48.00  
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly> : 1 688 901 022

Opening  
Pressure> bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall>thickness : 2.00  
x Length> mm: 450

Start of delivery  
Prestroke mm: -  
> (from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000  
Charge press. hPa: 1000  
Setting value mm: 2.70...2.90  
Shutoff  
electromagnet>Volt: 12.0

Supply-pump pressure

Speed 1/min: 1000  
Charge press hPa: 1000  
Setting value bar: 4.50...5.10  
Shutoff  
electromagnet>Volt: 12.0

Full-load del. with charge press.:

Speed 1/min: 1500  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 51.50...52.50  
Shutoff  
electromagnet>Volt: 12.0  
Dispersion cm<sup>3</sup>/: 2.5  
> 1000S.: (2.5)

Full-load del. w/out charge press.:

Speed 1/min: 600  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 40.00...41.00  
Shutoff  
electromagnet>Volt: 12.0

Low-idle speed regulation

Speed 1/min: 450  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 12.0...16.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 2.5  
> 1000S.: (2.5)

Residual-Delivery Setting

Speed 1/min: 800  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 3.50...5.50  
Shutoff  
electromagnet Volt: 12.0

Full-load speed regulation

Speed 1/min: 2400  
Charge press hPa: 1000  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 23.00...29.00  
Shutoff  
electromagnet>Volt: 12.0

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 50.00...80.00  
mind> 1000S.: 50.00

Shutoff  
electromagnet>Volt: 12.0

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1500  
Charge press hPa: -  
Inj.-qty. cm<sup>3</sup>/  
difference> 1000s.: - 8.0...16.0 \*  
Shutoff  
electromagnet>Volt: 12.0  
TD-travel dif.measurement

1.Speed 1/min: 1500  
Charge press hPa: -  
TD-travel  
difference> mm: - 0.8...0.9 \*  
Shutoff  
electromagnet>Volt: 12.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000  
Charge press hPa: 1000  
TD travel mm: 2.7...2.9  
> mm: (2.2...3.4)  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1500  
Charge press hPa: 1000  
TD travel mm: 4.9...5.5  
> mm: (4.5...5.9)  
Shutoff  
electromagnet>Volt: 12.0  
3rd speed 1/min: 2100  
Charge press hPa: 1000  
TD travel mm: 7.60...8.20  
> mm: (7.20...8.60)  
Shutoff  
electromagnet>Volt: 12.0

Supply-pump pressure characteristic:

1st speed 1/min: 1000  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 4.50...5.10  
> bar: -  
Shutoff  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1500  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 5.90...6.50  
> bar: -  
Shutoff  
electromagnet>Volt: 12.0

3rd speed 1/min: 2100  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 7.50...8.10  
> bar: -

Shutoff  
electromagnet>Volt: 12.0

Overflow quantity at overflow valve:

1st speed 1/min: 800  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 75.00...119.50  
quantity> cm<sup>3</sup>/10s: (50.00...134.50)  
2nd speed 1/min: 2100  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 97.30...180.70  
quantity> cm<sup>3</sup>/10s: (82.30...195.70)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 750  
Charge-air pressure-setting  
point> hPa: 450  
LDA-stroke mm: 6.7  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 47.00...48.00  
> 1000s.: (45.00...50.00)  
2nd speed 1/min: 2700  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 0.00...7.00  
> 1000s.: -  
3rd speed 1/min: 2500  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 11.0...19.0  
> 1000s.: (10.0...20.0)  
4th speed 1/min: 2400  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 23.0...29.0  
> 1000s.: (21.0...31.0)  
5th speed 1/min: 2100  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 50.00...53.00  
> 1000s.: (49.00...54.00)  
6th speed 1/min: 1500  
Charge press. hPa: 1000

Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm3/: 51.5...52.5  
 > 1000S.: (50.0...54.0)  
 7th speed 1/min: 800  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm3/: 53.5...56.5  
 > 1000S.: (52.5...57.5)  
 8th speed 1/min: 600  
 Charge press. hPa: -  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm3/: 40.0...41.0  
 > 1000S.: (38.0...43.0)

Electr. shutoff:

1st speed 1/min: 450  
 Del. quantity cm3/: 0.00...3.00  
 > 1000S.: -  
 Shutoff  
 electromagnet>volt: -  
 KSB/AFB  
 valve > Volt: 12.0

Damper set qty.:

LFG-setting:

Idle delivery:

1st speed 1/min: 450  
 Shutoff  
 electromagnet Volt: 12.0  
 Del. quantity cm3/: 12.00...16.00  
 > 1000S.: (10.00...18.00)  
 2nd speed 1/min: 500  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm3/: 4.0...10.0  
 > 1000S.: (2.5...11.5)

Rest delivery:

1st speed 1/min: 800  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm3/: 3.50...5.50  
 > 1000S.: (2.50...6.50)

Load-dependent start of delivery:

Inj.-qty.dif.measurement:  
 1st speed 1/min: 1500  
 Charge press. hPa: -  
 Inj.-qty. cm3/ : - 9.0..11.0 "

difference> 1000S.: -  
 Shutoff  
 electromagnet>Volt: 12.0  
 2nd speed 1/min: 1500  
 Charge press. hPa: -  
 Inj.-qty. cm3/: 4.0...6.0 Z'  
 difference> 1000S.: -  
 Shutoff  
 electromagnet Volt: 12.0  
 3rd speed 1/min: 1500  
 Charge press. hPa: ALFB  
 Inj.-qty. cm3/: 4.0...6.0 Z:  
 difference> 1000S.: -  
 KSB/AFB  
 valve > Volt: 12.0  
 Shutoff  
 electromagnet>Volt: 12.0

TD-travel dif.measurement:

correttore anticipo iniezione (SV):  
 1st speed 1/min: 1500  
 Charge press. hPa: -  
 TD-travel : - 0.7...1.3 '  
 difference> mm: -

Shutoff  
 electromagnet>Volt: 12.0  
 2nd speed 1/min: 1500  
 Charge press. hPa: ALFB  
 TD-travel : 0.0...0.6 :  
 difference> mm: -  
 KSB/AFB  
 valve > Volt: 12.0  
 Shutoff  
 electromagnet>Volt: 12.0

SP press.-dif.measurement:

pompa di mandata (FP):  
 1st speed 1/min: 1500  
 Charge press. hPa: -  
 Supply pump-  
 pressure > : - 0.1...0.3 "  
 difference> bar: -  
 Shutoff  
 electromagnet>Volt: 12.0

Automatic starting fuel delivery:

1st speed 1/min: 220  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm3/: 52.00...78.00  
 > 1000S.: -

2nd speed 1/min: 400  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm3/: 25.00...45.00  
 > 1000S.: -

3rd speed 1/min: 100



Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 50.0...80.0  
> 1000s.: -

Shutoff electromagnet:

Cut-in  
>min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.2...3.4
KF	mm: 5.2...5.6
MS	mm: 1.4...1.8
MS1	mm: ** 1,85 V
LDA stroke	mm: 6.7
Ya	mm: 37.2...39.2
Yb	mm: 38.2...46.8

Remarks:

⋮

Ya = Distance between VE flange and  
speed-control lever in idle  
position  
Measurement point = edge of control  
lever on drive end

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position  
Measurement point = edge of control  
lever on distributor-head end

Z = Absolute delivery

On initial measurement, screw in  
residual-quantity adjusting screw 2 mm.

Following pump adjustment, screw out  
residual-quantity adjusting screw 2 mm.

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA  
Edition : 01.08.95  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/9F2100R508-1  
Type number : 0 460 494 390  
Customer Part-No. :

Customer-specific information  
Customer : FIAT-AUTO

Engine : M718 NT19.L

Power KW: 66

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil  
return>temp. > °C  
with>thermometer> : 40.00...48.00  
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly> : 1 688 901 022

Opening  
Pressure> bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall>thickness : 2.00  
x Length> mm: 450

Start of delivery  
Prestroke mm: -  
> (from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000  
Charge press. hPa: 1000  
Setting value mm: 2.70...2.90  
Shutoff  
electromagnet>Volt: 12.0

Supply-pump pressure

Speed 1/min: 1000  
Charge press hPa: 1000  
Setting value bar: 4.50...5.10  
Shutoff  
electromagnet>Volt: 12.0

Full-load del. with charge press.:

Speed 1/min: 1500  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 51.50...52.50  
Shutoff  
electromagnet>Volt: 12.0  
Dispersion cm<sup>3</sup>/: 2.5  
> 1000S.: (2.5)

Full-load del. w/out charge press.:

Speed 1/min: 600  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 40.00...41.00  
Shutoff  
electromagnet>Volt: 12.0

Low-idle speed regulation

Speed 1/min: 450  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 12.0...16.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 2.5  
> 1000S.: (2.5)

Residual-Delivery Setting

Speed 1/min: 800  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 3.50...5.50  
Shutoff  
electromagnet Volt: 12.0

Full-load speed regulation

Speed 1/min: 2400  
Charge press hPa: 1000  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 23.00...29.00  
Shutoff  
electromagnet>Volt: 12.0

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 50.00...80.00  
mind> 1000S.: 50.00

Shutoff  
electromagnet>Volt: 12.0

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1500  
Charge press hPa: -  
Inj.-qty. cm3/  
difference> 1000S.: - 8.0...16.0 \*  
Shutoff  
electromagnet>Volt: 12.0  
TD-travel dif.measurement

1.Speed 1/min: 1500  
Charge press hPa: -  
TD-travel  
difference> mm: - 0.8...0.9 \*  
Shutoff  
electromagnet>Volt: 12.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000  
Charge press hPa: 1000  
TD travel mm: 2.7...2.9  
> mm: (2.2...3.4)  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1000  
Charge press hPa: 1000  
TD travel mm: 4.9...5.5  
> mm: (4.5...5.9)  
Shutoff  
electromagnet>Volt: 12.0  
3rd speed 1/min: 2100  
Charge press hPa: 1000  
TD travel mm: 7.60...8.20  
> mm: (7.20...8.60)  
Shutoff  
electromagnet>Volt: 12.0

Supply-pump pressure characteristic:

1st speed 1/min: 1000  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 4.50...5.10  
> bar: -  
Shutoff  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1500  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 5.90...6.50  
> bar: -  
Shutoff  
electromagnet>Volt: 12.0

3rd speed 1/min: 2100  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 7.50...8.10  
> bar: -

Shutoff  
electromagnet>Volt: 12.0

Overflow quantity at overflow valve:

1st speed 1/min: 800  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 75.00...119.50  
quantity> cm3/10s: (50.00...134.50)  
2nd speed 1/min: 2100  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 97.30...180.70  
quantity> cm3/10s: (82.30...195.70)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 750  
Charge-air pressure-setting  
point> hPa: 450  
LDA-stroke mm: 6.7  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 47.00...48.00  
> 1000S.: (45.00...50.00)  
2nd speed 1/min: 2700  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm3/: 0.00...7.00  
> 1000S.: -  
3rd speed 1/min: 2500  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 11.0...19.0  
> 1000S.: (10.0...20.0)  
4th speed 1/min: 2400  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 23.0...29.0  
> 1000S.: (21.0...31.0)  
5th speed 1/min: 2100  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 50.00...53.00  
> 1000S.: (49.00...54.00)  
6th speed 1/min: 1500  
Charge press. hPa: 1000

Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 51.5...52.5  
> 1000S.: (50.0...54.0)  
7th speed 1/min: 800  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 53.5...56.5  
> 1000S.: (52.5...57.5)  
8th speed 1/min: 600  
Charge press. hPa: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 40.0...41.0  
> 1000S.: (38.0...43.0)

Electr. shutoff:

1st speed 1/min: 450  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
> 1000S.: -

Shutoff

electromagnet>volt: -  
KSB/AFB  
valve > Volt: 12.0

Damper set qty.:

LFG-setting:

Idle delivery:

1st speed 1/min: 450  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 12.00...16.00  
> 1000S.: (10.00...18.00)  
2nd speed 1/min: 500  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 4.0...10.0  
> 1000S.: (2.5...11.5)

Rest delivery:

1st speed 1/min: 800  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 3.50...5.50  
> 1000S.: (2.50...6.50)

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1500  
Charge press. hPa: -  
Inj.-qty. cm<sup>3</sup>/ : - 9.0..11.0 "

difference> 1000S.: -  
Shutoff  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1500  
Charge press. hPa: -  
Inj.-qty. cm<sup>3</sup>/: 4.0...6.0 Z'  
difference> 1000S.: -  
Shutoff  
electromagnet Volt: 12.0  
3rd speed 1/min: 1500  
Charge press. hPa: ALFB  
Inj.-qty. cm<sup>3</sup>/: 4.0...6.0 Z:  
difference> 1000S.: -  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0

TD-travel dif.measurement:

correttore anticipo iniezione (SV):  
1st speed 1/min: 1500  
Charge press. hPa: -  
TD-travel : - 0.7...1.3 '  
difference> mm: -

Shutoff

electromagnet>Volt: 12.0  
2nd speed 1/min: 1500  
Charge press. hPa: ALFB  
TD-travel : 0.0...0.6 :  
difference> mm: -  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0

SP press.-dif.measurement:

pompa di mandata (FP):  
1st speed 1/min: 1500  
Charge press. hPa: -  
Supply pump-  
pressure > : - 0.1...0.3 "  
difference> bar: -  
Shutoff  
electromagnet>Volt: 12.0

Part-load del.at 3rd inj.-qty.  
terza fermo della portata  
stop (EGR set)  
scarico) (ARF)  
gaz d'échappement-ARF)  
Spacing mm: 12.0

1st speed 1/min: 1000  
Charge press. hPa: -  
KSB/AFB  
valve > Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 18.5..20.5\*\*  
> 1000S.: (17.5...21.5)

Automatic starting fuel delivery:

1st speed 1/min: 220  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 52.00...78.00  
> 1000S.: -

2nd speed 1/min: 400  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 25.00...45.00  
> 1000S.: -

3rd speed 1/min: 100  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 50.0...80.0  
> 1000S.: -

Shutoff electromagnet:

Cut-in  
>min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.2...3.4
KF	mm: 5.2...5.6
MS	mm: 1.4...1.8
MS1	mm: ** 1,85 V
LDA stroke	mm: 6.7
Ya	mm: 37.2...39.2
Yb	mm: 38.2...46.8

Remarks:

⋮

Ya = Distance between VE flange and  
speed-control lever in idle  
position  
Measurement point = edge of control  
lever on drive end

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position  
Measurement point = edge of control  
lever on distributor-head end

Z = Absolute delivery

On initial measurement, screw in

residual-quantity adjusting screw 2 mm.

Following pump adjustment, screw out  
residual-quantity adjusting screw 2 mm.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW
Edition : 04.08.95
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/9F2100R471-2
Type number : 0 460 494 391
Customer Part-No. :

Customer-specific information
Customer : VW 1.9 L

Engine : UD T4

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 111

Opening
Pressure> bar: 147.00...150.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 450

Start of delivery
Prestroke mm: -
> (from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 3.70...4.10
Shutoff
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 5.30...5.90
Shutoff
electromagnet>Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1250
Del. quantity cm3/
> 1000S.: 39.50...40.50
Shutoff
electromagnet>Volt: 12
Dispersion cm3/: 2.5
> 1000S.: (3.5)

Residual-Delivery Setting

Speed 1/min: 550
Del. quantity cm3/
> 1000S.: 5.0...6.0
Shutoff
electromagnet Volt: 12.0
Dispersion cm3/: 2.0
> 1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2400
Del. quantity cm3/
> 1000S.: 13.00...17.00
Shutoff
electromagnet>Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 40.00...90.00
mind> 1000S.: 40.00
Shutoff
electromagnet>Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Inj.-qty. cm3/
difference> 1000S.: - 7.0...13.0 \*
Shutoff
electromagnet>Volt: 12.0
TD-travel dif.measurement

1.Speed 1/min: 1250
TD-travel
difference> mm: - 0.9...1.1 \*
Shutoff
electromagnet>Volt: 12.0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1250  
 TD travel mm: 3.7...4.1  
 > mm: (3.1...4.7)  
 electromagnet>Volt: 12.0  
 2nd speed 1/min: 1700  
 TD travel mm: 5.60...6.40  
 > mm: (5.20...6.80)  
 Shutoff  
 electromagnet>Volt: 12  
 3rd speed 1/min: 750  
 TD travel mm: 1.10...1.90  
 > mm: (0.70...2.30)  
 Shutoff  
 electromagnet>Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 1250  
 Supply-pump pressure> bar: 5.30...5.90  
 > bar: -  
 Shutoff  
 electromagnet>Volt: 12  
 2nd speed 1/min: 1700  
 Supply-pump pressure> bar: 6.60...7.20  
 > bar: -  
 Shutoff  
 electromagnet>Volt: 12  
 3rd speed 1/min: 750  
 Supply-pump pressure> bar: 3.80...4.40  
 > bar: -  
 Shutoff  
 electromagnet>Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 750  
 Shutoff  
 electromagnet>Volt: 12  
 Overflow quantity> cm3/10s: (41.70...86.10)  
 2nd speed 1/min: 1850  
 Shutoff  
 electromagnet>Volt: 12  
 Overflow quantity> cm3/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1650  
 Shutoff  
 electromagnet>Volt: 12  
 Del. quantity cm3/: 0.0...3.0  
 > 1000S.: -  
 2nd speed 1/min: 2400

Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 13.0...17.0  
 > 1000S.: (11.0...19.0)  
 3rd speed 1/min: 2250  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm3/: 24.0...34.0  
 > 1000S.: (23.0...35.0)  
 4th speed 1/min: 1850  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm3/: 40.0...42.0  
 > 1000S.: (38.8...43.2)  
 5th speed 1/min: 1250  
 Shutoff  
 electromagnet>Volt: 12  
 Del. quantity cm3/: 39.50...40.50  
 > 1000S.: (37.80...42.20)  
 6th speed 1/min: 750  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm3/: 37.0...40.0  
 > 1000S.: (35.5...41.5)  
 7th speed 1/min: 450  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm3/: 36.0...42.0  
 > 1000S.: (33.5...44.5)

Electr. shutoff:

1st speed 1/min: 425  
 Del. quantity cm3/: 0.00...3.00  
 > 1000S.: (0.00...3.00)  
 Shutoff  
 electromagnet>volt: -

Damper set qty.:

LFG-setting:

Idle delivery:

1st speed 1/min: 425  
 Shutoff  
 electromagnet Volt: 12.0  
 Del. quantity cm3/: 5.5...7.5  
 > 1000S.: (2.5...10.5)

High Idle:

1st speed 1/mi: 500  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm3/: 5.5...7.5  
 > 1000S.: (2.5...10.5)

Rest delivery:

1st speed 1/min: 550  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm3/: 5.0...6.0  
 > 1000S.: (3.5...7.5)  
 2nd speed 1/min: 515  
 Shutoff  
 electromagnet Volt: 12.0  
 Del. quantity cm3/: 5.5...7.5  
 > 1000S.: (4.0...9.0)

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1250  
 Inj.-qty. cm3/ : 0.0...3.0 Z "  
 difference> 1000S.: -  
 Shutoff  
 electromagnet>Volt: 12.0

TD-travel dif.measurement:  
 correttore anticipo iniezione (SV):  
 1st speed 1/min: 1250  
 TD-travel : - 1.3...1.7 "  
 difference> mm: - (0.9...2.1)  
 Shutoff  
 electromagnet>Volt: 12.0

SP press.-dif.measurement:  
 pompa di mandata (FP):  
 1st speed 1/min: 1250  
 Supply pump-  
 pressure > : - 0.7...1.1 "  
 difference> bar: - (0.5...1.3)  
 Shutoff  
 electromagnet>Volt: 12.0

Part-load del.at 3rd inj.-qty.  
 terza fermo della portata  
 stop (EGR set)  
 scarico) (ARF)  
 gaz d'échappement-ARF)  
 Spacing mm: 12.0

1st speed 1/min: 1000  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm3/: 21.0...23.0 \*  
 > 1000S.: (19.0...25.0)

Automatic starting fuel delivery:

1st speed 1/min: 380  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm3/: 25.0...45.0  
 > 1000S.: -

2nd speed 1/min: 180  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm3/: 40.0...90.0  
 > 1000S.: -

3rd speed 1/min: 100  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm3/: 40.0...90.0  
 > 1000S.: -

Shutoff electromagnet:

Cut-in  
 >min voltage : 10.0  
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation	
K	mm: 3.2...3.4
KF	mm: 5.1...5.5
MS	mm: 1.2...1.4
XK	mm: MIKROSCH.
XL	mm: 0.8...3.0 *
Ya	mm: 20.0...22.0
Yb	mm: 61.5...72.5

Remarks:

:  
 :  
 Ya = Distance between VE flange and  
 speed-control lever in idle  
 position  
 Measurement point = edge of control  
 lever on drive end

Yb = Distance between VE flange and  
 speed-control lever in rated speed  
 position  
 Measurement point = edge of control  
 lever on distributor-head end

On initial measurement, screw in  
 residual-quantity adjusting screw 2 mm.

Following pump adjustment, screw out  
 residual-quantity adjusting screw 2 mm.



BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN
Edition : 04.08.95
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/9F2250R593-2
Type number : 0 460 494 393
Customer Part-No. :

Customer-specific information
Customer : RENAULT

Engine : G8T-760 CA

Power KW: 81

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 022

Opening
Pressure> bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 450

Start of delivery
Prestroke mm: -
> (from BDC): -

Indicator setting
Piston stroke> mm: 0,74
Outlet> : C

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250

CO2

Charge press. hPa: 1000
Setting value mm: 2.60...3.00
Shutoff
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Charge press hPa: 1000
Setting value bar: 5.10...5.70
Shutoff
electromagnet>Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250
Charge press. hPa: 1000
Del. quantity cm3/
> 1000S.: 58.20...59.20
Shutoff
electromagnet>Volt: 12
Dispersion cm3/: 2.0
> 1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
> 1000S.: 42.5...43.5
Shutoff
electromagnet>Volt: 12.0

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
> 1000S.: 19.5...23.5
Shutoff
electromagnet>Volt: 12.0
Del. quantity cm3/: 2.5
> 1000S.: (2.5)

Residual-Delivery Setting

Speed 1/min: 450
Del. quantity cm3/
> 1000S.: 5.00...9.00
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2450
Charge press hPa: 1000
Del. quantity cm3/
> 1000S.: 27.0...33.0
Shutoff
electromagnet>Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 47.50...52.50  
mind> 1000S.: 47.00  
Shutoff  
electromagnet>Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1250  
Charge press hPa: -  
Inj.-qty. cm<sup>3</sup>/  
difference> 1000S.: - 9.0...13.0 \*  
Shutoff  
electromagnet>Volt: 12.0  
TD-travel dif.measurement

1.Speed 1/min: 1250  
Charge press hPa: -  
TD-travel  
difference> mm: - 0.6...0.8 \*  
Shutoff  
electromagnet>Volt: 12.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600  
Charge press hPa: 1000  
TD travel mm: 1.50...3.90  
> mm: -  
KSB/AFB  
valve > Volt: 12.0  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1000  
Charge press hPa: 1000  
TD travel mm: 1.50...2.30  
> mm: (1.30...2.50)

KSB/AFB  
valve > Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
3rd speed 1/min: 1250  
Charge press hPa: 1000  
TD travel mm: 2.60...3.00  
> mm: (2.30...3.30)  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
4th speed 1/min: 2150  
Charge press hPa: 1000  
TD travel mm: 5.50...6.30  
> mm: (5.30...6.50)  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 3.30...3.90  
> bar: -

Shutoff  
electromagnet>Volt: 12  
2nd speed 1/min: 1250  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 5.10...5.70  
> bar: -

Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12  
3rd speed 1/min: 2150  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 6.90...7.50  
> bar: -

Shutoff  
electromagnet>Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 50.00...94.40  
quantity> cm<sup>3</sup>/10s: (35.00...109.4)  
2nd speed 1/min: 2150  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 77.70...161.10  
quantity> cm<sup>3</sup>/10s: (62.70...176.10)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 750  
Charge-air pressure-setting  
point> hPa: 300  
LDA-stroke mm: 7.3  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 49.5...50.5  
> 1000S.: (47.7...52.3)  
2nd speed 1/min: 2600  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 0.00...5.00  
> 1000S.: (0.00...5.00)  
3rd speed 1/min: 2550  
Charge press. hPa: 1000  
Shutoff

```

electromagnet>Volt: 12.0
Del. quantity cm3/: 6.5...14.5
> 1000S.: (5.50...15.50)
4th speed 1/min: 2450
Charge press. hPa: 1000
Shutoff
electromagnet>Volt: 12.0
Del. quantity cm3/: 27.0...33.0
> 1000S.: (26.0...34.0)
5th speed 1/min: 2150
Charge press. hPa: 1000
Shutoff
electromagnet>Volt: 12.0
Del. quantity cm3/: 55.70...58.70
> 1000S.: (54.40...59.00)
6th speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet>Volt: 12.0
Del. quantity cm3/: 58.2...59.2
> 1000S.: (56.4...61.0)
7th speed 1/min: 1000
Charge press. hPa: 1000
Shutoff
electromagnet>Volt: 12.0
Del. quantity cm3/: 58.1...61.1
> 1000S.: (57.3...61.9)
8th speed 1/min: 500
Charge press. hPa: 1000
Shutoff
electromagnet>Volt: 12.0
Del. quantity cm3/: 55.70...58.70
> 1000S.: (54.90...59.50)
9th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet>Volt: 12.0
Del. quantity cm3/: 42.50...43.50
> 1000S.: (40.70...45.30)

```

Electr. shutoff:

```

1st speed 1/min: 350
Charge press. hPa: -
Del. quantity cm3/: 0.00...3.00
> 1000S.: (0.00...3.00)
Shutoff
electromagnet>volt: -
Timing valve Volt: -

```

Damper set qty.:

LFG-setting:

Idle delivery:

```

1st speed 1/min: 350
Timing valve Volt: -

```

```

Shutoff
electromagnet Volt: 12.0
Del. quantity cm3/: 19.5...23.5
> 1000S.: (17.5...25.5)

```

High Idle:

```

1st speed 1/mi: 400
Shutoff
electromagnet>Volt: 12.0
Del. quantity cm3/: 17.5...21.5
> 1000S.: (15.5...23.5)

```

Rest delivery:

```

1st speed 1/min: 450
Shutoff
electromagnet>Volt: 12.0
Del. quantity cm3/: 5.0...9.0
> 1000S.: -

```

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

```

1st speed 1/min: 1250
Charge press. hPa: -
Inj.-qty. cm3/ : - 7.5...9.5 "
difference> 1000S.: -
Shutoff
electromagnet>Volt: 12.0
2nd speed 1/min: 1250
Charge press. hPa: -
Inj.-qty. cm3/: 2.0...8.0 Z'
difference> 1000S.: -
3rd speed 1/min: 1250
Charge press. hPa: ALFB
Inj.-qty. cm3/: 2.0...8.0 Z**
difference> 1000S.: -
KSB/AFB
valve > Volt: 12.0
Shutoff
electromagnet>Volt: 12.0

```

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):

```

1st speed 1/min: 1250
Charge press. hPa: -
TD-travel : -0.3...0.9 '
difference> mm: -
Shutoff
electromagnet>Volt: 12.0
2nd speed 1/min: 1250
Charge press. hPa: ALFB
TD-travel : 0.0...0.6 **
difference> mm: -
KSB/AFB
valve > Volt: 12.0
Shutoff
electromagnet>Volt: 12.0

```

SP press.-dif.measurement:

pompa di mandata (FP):  
1st speed 1/min: 1250  
Charge press. hPa: -  
Supply pump-  
pressure > : - 0.1...0.3 "  
difference> bar: -  
Shutoff  
electromagnet>Volt: 12.0

Automatic starting fuel delivery:

1st speed 1/min: 200  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 50.00...70.00  
> 1000S.: -

2nd speed 1/min: 300  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 30.00...50.00  
> 1000S.: -

4th speed 1/min: 100  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 47.50...52.50  
> 1000S.: -

Shutoff electromagnet:

Cut-in  
>min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: 3.6...3.8  
KF mm: 6.00  
MS mm: 0.7...1.1  
LDA stroke mm: 7.3  
Ya mm: 37.2...41.2  
Yb mm: 61.3...69.7

Remarks:

:  
:

Ya = Distance between VE flange and  
speed-control lever in idle  
position  
Measurement point = edge of control  
lever on drive end

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position  
Measurement point = edge of control

lever on distributor-head end

Permissible port/port scatter with  
stop test, electrical = max. 5.0  
ccm/1000 S.

Permissible port/port scatter with  
stop test, mechanical = max. 5.0  
ccm/1000 S.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN
Edition : 04.08.95
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/9F2250R593-3
Type number : 0 460 494 394
Customer Part-No. :

Customer-specific information
Customer : RENAULT

Engine : G8T-760 CA

Power KW: 81

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 022

Opening
Pressure> bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 450

Start of delivery
Prestroke mm: -
> (from BDC): -

Indicator setting
Piston stroke> mm: 0,74
Outlet> : C

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250

Charge press. hPa: 1000
Setting value mm: 2.60...3.00
Shutoff
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Charge press hPa: 1000
Setting value bar: 5.10...5.70
Shutoff
electromagnet>Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250
Charge press. hPa: 1000
Del. quantity cm3/
> 1000S.: 58.20...59.20
Shutoff
electromagnet>Volt: 12
Dispersion cm3/: 2.0
> 1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
> 1000S.: 42.5...43.5
Shutoff
electromagnet>Volt: 12.0

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
> 1000S.: 19.5...23.5
Shutoff
electromagnet>Volt: 12.0
Del. quantity cm3/: 2.5
> 1000S.: (2.5)

Residual-Delivery Setting

Speed 1/min: 450
Del. quantity cm3/
> 1000S.: 5.00...9.00
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2450
Charge press hPa: 1000
Del. quantity cm3/
> 1000S.: 27.0...33.0
Shutoff
electromagnet>Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 47.50...52.50  
mind> 1000s.: 47.00  
Shutoff  
electromagnet>Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1250  
Charge press hPa: -  
Inj.-qty. cm<sup>3</sup>/  
difference> 1000s.: - 9.0...13.0 \*  
Shutoff  
electromagnet>Volt: 12.0  
TD-travel dif.measurement

1.Speed 1/min: 1250  
Charge press hPa: -  
TD-travel  
difference> mm: - 0.6...0.8 \*  
Shutoff  
electromagnet>Volt: 12.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600  
Charge press hPa: 1000  
TD travel mm: 1.50...3.90  
> mm: -  
KSB/AFB  
valve > Volt: 12.0  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1000  
Charge press hPa: 1000  
TD travel mm: 1.50...2.30  
> mm: (1.30...2.50)  
KSB/AFB  
valve > Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
3rd speed 1/min: 1250  
Charge press hPa: 1000  
TD travel mm: 2.60...3.00  
> mm: (2.30...3.30)  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
4th speed 1/min: 2150  
Charge press hPa: 1000  
TD travel mm: 5.50...6.30  
> mm: (5.30...6.50)  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12.0

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 3.30...3.90  
> bar: -  
Shutoff  
electromagnet>Volt: 12  
2nd speed 1/min: 1250  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 5.10...5.70  
> bar: -  
Timing valve Volt: -  
Shutoff  
electromagnet>Volt: 12  
3rd speed 1/min: 2150  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 6.90...7.50  
> bar: -  
Shutoff  
electromagnet>Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 50.00...94.40  
quantity> cm<sup>3</sup>/10s: (35.00...109.4)  
2nd speed 1/min: 2150  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 77.70...161.10  
quantity> cm<sup>3</sup>/10s: (62.70...176.10)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 750  
Charge-air pressure-setting  
point> hPa: 300  
LDA-stroke mm: 7.3  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 49.5...50.5  
> 1000s.: (47.7...52.3)  
2nd speed 1/min: 2600  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 0.00...5.00  
> 1000s.: (0.00...5.00)  
3rd speed 1/min: 2550  
Charge press. hPa: 1000  
Shutoff

```

electromagnet>Volt: 12.0
Del. quantity cm3/: 6.5...14.5
> 1000S.: (5.50...15.50)
4th speed 1/min: 2450
Charge press. hPa: 1000
Shutoff
electromagnet>Volt: 12.0
Del. quantity cm3/: 27.0...33.0
> 1000S.: (26.0...34.0)
5th speed 1/min: 2150
Charge press. hPa: 1000
Shutoff
electromagnet>Volt: 12.0
Del. quantity cm3/: 55.70...58.70
> 1000S.: (54.40...59.00)
6th speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet>Volt: 12.0
Del. quantity cm3/: 58.2...59.2
> 1000S.: (56.4...61.0)
7th speed 1/min: 1000
Charge press. hPa: 1000
Shutoff
electromagnet>Volt: 12.0
Del. quantity cm3/: 58.1...61.1
> 1000S.: (57.3...61.9)
8th speed 1/min: 500
Charge press. hPa: 1000
Shutoff
electromagnet>Volt: 12.0
Del. quantity cm3/: 55.70...58.70
> 1000S.: (54.90...59.50)
9th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet>Volt: 12.0
Del. quantity cm3/: 42.50...43.50
> 1000S.: (40.70...45.30)

```

Electr. shutoff:

```

1st speed 1/min: 350
Charge press. hPa: -
Del. quantity cm3/: 0.00...3.00
> 1000S.: (0.00...3.00)
Shutoff

```

```

electromagnet>volt: -
Timing valve Volt: -

```

Damper set qty.:

LFG-setting:

Idle delivery:

```

1st speed 1/min: 350
Timing valve Volt: -

```

```

Shutoff
electromagnet Volt: 12.0
Del. quantity cm3/: 19.5...23.5
> 1000S.: (17.5...25.5)

```

High Idle:

```

1st speed 1/mi: 400
Shutoff
electromagnet>Volt: 12.0
Del. quantity cm3/: 17.5...21.5
> 1000S.: (15.5...23.5)

```

Rest delivery:

```

1st speed 1/min: 450
Shutoff
electromagnet>Volt: 12.0
Del. quantity cm3/: 5.0...9.0
> 1000S.: -

```

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

```

1st speed 1/min: 1250
Charge press. hPa: -
Inj.-qty. cm3/ : - 7.5...9.5 "
difference> 1000S.: -
Shutoff

```

```

electromagnet>Volt: 12.0
2nd speed 1/min: 1250
Charge press. hPa: -
Inj.-qty. cm3/: 2.0...8.0 Z'
difference> 1000S.: -
3rd speed 1/min: 1250
Charge press. hPa: ALFB
Inj.-qty. cm3/: 2.0...8.0 Z**
difference> 1000S.: -
KSB/AFB
valve > Volt: 12.0
Shutoff
electromagnet>Volt: 12.0

```

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):

```

1st speed 1/min: 1250
Charge press. hPa: -
TD-travel : -0.3...0.9 '
difference> mm: -
Shutoff

```

```

electromagnet>Volt: 12.0
2nd speed 1/min: 1250
Charge press. hPa: ALFB
TD-travel : 0.0...0.6 **
difference> mm: -
KSB/AFB
valve > Volt: 12.0
Shutoff
electromagnet>Volt: 12.0

```

SP press.-dif.measurement:

pompa di mandata (FP):  
1st speed 1/min: 1250  
Charge press. hPa: -  
Supply pump-  
pressure > : - 0.1...0.3 "  
difference> bar: -  
Shutoff  
electromagnet>Volt: 12.0

Automatic starting fuel delivery:

1st speed 1/min: 200  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 50.00...70.00  
> 1000S.: -

2nd speed 1/min: 300  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 30.00...50.00  
> 1000S.: -

4th speed 1/min: 100  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 47.50...52.50  
> 1000S.: -

Shutoff electromagnet:

Cut-in  
>min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: 3.6...3.8  
KF mm: 6.00  
MS mm: 0.7...1.1  
LDA stroke mm: 7.3  
Ya mm: 37.2...41.2  
Yb mm: 61.3...69.7

Remarks:

:  
:

Ya = Distance between VE flange and  
speed-control lever in idle  
position  
Measurement point = edge of control  
lever on drive end

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position  
Measurement point = edge of control

Lever on distributor-head end

Permissible port/port scatter with  
stop test, electrical = max. 5.0  
ccm/1000 S.

Permissible port/port scatter with  
stop test, mechanical = max. 5.0  
ccm/1000 S.



BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN  
Edition : 04.08.95  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/9F2400R581-2  
Type number : 0 460 494 396  
Customer Part-No. :

Customer-specific information  
Customer : RENAULT

Engine : G8T - 752 CA

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return>temp. > °C  
with>thermometer> : 40.00...48.00  
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly> : 1 688 901 022

Opening  
Pressure> bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall>thickness : 2.00  
x Length> mm: 450

Start of delivery  
Prestroke mm: -  
> (from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250  
Setting value mm: 2.30...2.70  
Shutoff  
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1250  
Setting value bar: 5.90...6.50  
Shutoff  
electromagnet>Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1250  
Del. quantity cm3/  
> 1000S.: 36.9...37.9  
Shutoff  
electromagnet>Volt: 12.0  
Dispersion cm3/: 2.5  
> 1000S.: (2.5)

Residual-Delivery Setting

Speed 1/min: 450  
Del. quantity cm3/  
> 1000S.: 3.00...7.00  
Shutoff  
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2600  
Del. quantity cm3/  
> 1000S.: 20.00...26.00  
Shutoff  
electromagnet>Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm3/: 45.00...75.00  
mind> 1000S.: 45.00  
Shutoff  
electromagnet>Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1250  
Inj.-qty. cm3/  
difference> 1000S.: -7.4...11.4 \*  
Shutoff  
electromagnet>Volt: 12  
TD-travel dif.measurement

1.Speed 1/min: 1250  
TD-travel  
difference> mm: - 0.7...0.9 \*  
Shutoff  
electromagnet>Volt: 12.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000  
 TD travel mm: 6.00...6.80  
 > mm: (5.80...7.00)  
 Shutoff  
 electromagnet>Volt: 12  
 3rd speed 1/min: 1250  
 TD travel mm: 2.30...2.70  
 > mm: (2.00...3.00)  
 Shutoff  
 electromagnet>Volt: 12  
 4th speed 1/min: 1000  
 TD travel mm: 0.60...1.40  
 > mm: (0.40...1.60)  
 Shutoff  
 electromagnet>Volt: 12  
 9th speed 1/min: 750  
 TD travel mm: 0.0...2.20  
 > mm: -  
 KSB/AFB  
 valve > Volt: 12  
 Shutoff  
 electromagnet>Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 750  
 Supply-pump  
 pressure> bar: 4.40...5.00  
 > bar: -  
 Shutoff  
 electromagnet>Volt: 12  
 2nd speed 1/min: 1250  
 Supply-pump  
 pressure> bar: 5.90...6.50  
 Shutoff  
 electromagnet>Volt: 12  
 3rd speed 1/min: 2000  
 Supply-pump  
 pressure> bar: 7.90...8.50  
 > bar: -  
 Shutoff  
 electromagnet>Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 750  
 Shutoff  
 electromagnet>Volt: 12  
 Overflow : 41.70...86.10  
 quantity> cm3/10s: (26.70...101.10)  
 2nd speed 1/min: 2300  
 Shutoff  
 electromagnet>Volt: 12  
 Overflow : 55.60...139.00  
 quantity> cm3/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2800

Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 0.00...5.00  
 > 1000S.: (0.00...5.00)  
 5th speed 1/min: 2600  
 Shutoff  
 electromagnet>Volt: 12  
 Del. quantity cm3/: 20.00...26.00  
 > 1000S.: (19.00...27.00)  
 8th speed 1/min: 2500  
 Shutoff  
 electromagnet>Volt: 12  
 Del. quantity cm3/: 31.50...39.50  
 > 1000S.: (30.50...40.50)  
 9th speed 1/min: 2300  
 Shutoff  
 electromagnet>Volt: 12  
 Del. quantity cm3/: 40.00...42.00  
 > 1000S.: (38.70...43.30)  
 10th speed 1/min: 2000  
 Shutoff  
 electromagnet>Volt: 12  
 Del. quantity cm3/: 39.30...41.30  
 > 1000S.: (38.00...42.60)  
 12th speed 1/min: 1250  
 Shutoff  
 electromagnet>Volt: 12  
 Del. quantity cm3/: 36.90...37.90  
 > 1000S.: (35.1...39.7)  
 15th speed 1/min: 1000  
 Shutoff  
 electromagnet>Volt: 12  
 Del. quantity cm3/: 36.20...39.20  
 > 1000S.: (35.40...40.00)  
 20th speed 1/min: 750  
 Shutoff  
 electromagnet>Volt: 12  
 Del. quantity cm3/: 35.00...38.00  
 > 1000S.: (34.20...38.80)

Electr. shutoff:

1st speed 1/min: 385  
 Del. quantity cm3/: 0.00...3.00  
 > 1000S.: (0.00...3.00)  
 Shutoff  
 electromagnet>volt: -

Damper set qty.:

LFG-setting:

Idle delivery:

1st speed 1/min: 385  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 12.00...16.00

> 1000S.: (10.0...18.00)

High Idle:

1st speed 1/mi: 435  
 Shutoff  
 electromagnet>Volt: 12  
 Del. quantity cm<sup>3</sup>/: 10.0...14.00  
 > 1000S.: (8.00...16.00)

Rest delivery:

1st speed 1/min: 450  
 Shutoff  
 electromagnet>Volt: 12  
 Del. quantity cm<sup>3</sup>/: 3.00...7.00  
 > 1000S.: (1.00...9.00)

Load-dependent start of delivery:  
 Inj.-qty.dif.measurement:

1st speed 1/min: 1250  
 Inj.-qty. cm<sup>3</sup>/ : -6.1...8.1 "  
 difference> 1000S.: -  
 Shutoff  
 electromagnet>Volt: 12  
 2nd speed 1/min: 1250  
 Inj.-qty. cm<sup>3</sup>/: 2.00...8.0 Z\*  
 difference> 1000S.: -  
 Shutoff  
 electromagnet Volt: 12.0  
 3rd speed 1/min: 1250  
 Charge press. hPa: ALFB  
 Inj.-qty. cm<sup>3</sup>/: 2.0...8.0 Z\*\*  
 difference> 1000S.: -  
 Shutoff  
 electromagnet>Volt: 12.0

TD-travel dif.measurement:  
 correttore anticipo iniezione (SV):  
 1st speed 1/min: 1250  
 TD-travel : -1.0...1.4 '  
 difference> mm: -  
 Shutoff  
 electromagnet>Volt: 12  
 3rd speed 1/min: 1250  
 Charge press. hPa: ALFB  
 TD-travel : 0.0...0.6 \*\*  
 difference> mm: -  
 Shutoff  
 electromagnet>Volt: 12.0

SP press.-dif.measurement:  
 pompa di mandata (FP):  
 1st speed 1/min: 1250  
 Supply pump-  
 pressure > : - 0.1...0.3 "  
 difference> bar: -  
 Shutoff  
 electromagnet>Volt: 12.0

Part-load del.at 3rd inj.-qty.  
 terza fermo della portata  
 stop (EGR set)  
 scarico) (ARF)  
 gaz d'échappement-ARF)  
 Spacing mm: 12.0

1st speed 1/min: 1250  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 22.5...23.5 \*  
 > 1000S.: (20.5...25.5)

Automatic starting fuel delivery:

1st speed 1/min: 200  
 Shutoff  
 electromagnet>Volt: 12  
 Del. quantity cm<sup>3</sup>/: 45.00...95.00  
 > 1000S.: (45.00...95.00)

2nd speed 1/min: 350  
 Shutoff  
 electromagnet>Volt: 12  
 Del. quantity cm<sup>3</sup>/: 15.00...45.00  
 > 1000S.: (15.00...45.00)

4th speed 1/min: 100  
 Shutoff  
 electromagnet>Volt: 12  
 Del. quantity cm<sup>3</sup>/: 45.00...75.00  
 > 1000S.: (45.00...75.00)

Shutoff electromagnet:

Cut-in  
 >min voltage : 10.0  
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.6...3.8
KF	mm: 6.0
MS	mm: 0.6...1.0
XK	mm: A = 0.8...3.0
XL	mm: MIKROSCH.
Ya	mm: 37.2...41.2
Yb	mm: 61.3...69.7

Remarks:

Z = Absolute delivery

Ya = Distance between VE flange and  
 speed-control lever in idle  
 position  
 Measurement point = edge of control

Lever on drive end

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position  
Measurement point = edge of control  
lever on distributor-head end

Permissible port/port scatter with  
stop test, electrical = max. 5.0  
ccm/1000 S.



# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN  
Edition : 04.08.95  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/9F2400R581-3  
Type number : 0 460 494 397  
Customer Part-No. :

Customer-specific information  
Customer : RENAULT

Engine : G8T - 752 CA

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return>temp. > °C  
with>thermometer> : 40.00...48.00  
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly> : 1 688 901 022

Opening  
Pressure> bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall>thickness : 2.00  
x Length> mm: 450

Start of delivery  
Prestroke mm: -  
> (from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250  
Setting value mm: 2.30...2.70  
Shutoff  
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1250  
Setting value bar: 5.90...6.50  
Shutoff  
electromagnet>Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1250  
Del. quantity cm3/  
> 1000S.: 36.9...37.9  
Shutoff  
electromagnet>Volt: 12.0  
Dispersion cm3/: 2.5  
> 1000S.: (2.5)

Residual-Delivery Setting

Speed 1/min: 450  
Del. quantity cm3/  
> 1000S.: 3.00...7.00  
Shutoff  
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2600  
Del. quantity cm3/  
> 1000S.: 20.00...26.00  
Shutoff  
electromagnet>Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm3/: 45.00...75.00  
mind> 1000S.: 45.00  
Shutoff  
electromagnet>Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1250  
Inj.-qty. cm3/  
difference> 1000S.: -7.4...11.4 \*  
Shutoff  
electromagnet>Volt: 12  
TD-travel dif.measurement

1.Speed 1/min: 1250  
TD-travel  
difference> mm: - 0.7...0.9 \*  
Shutoff  
electromagnet>Volt: 12.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000  
 TD travel mm: 6.00...6.80  
 > mm: (5.80...7.00)  
 Shutoff  
 electromagnet>Volt: 12  
 3rd speed 1/min: 1250  
 TD travel mm: 2.30...2.70  
 > mm: (2.00...3.00)  
 Shutoff  
 electromagnet>Volt: 12  
 4th speed 1/min: 1000  
 TD travel mm: 0.60...1.40  
 > mm: (0.40...1.60)  
 Shutoff  
 electromagnet>Volt: 12  
 9th speed 1/min: 750  
 TD travel mm: 0.0...2.20  
 > mm: -  
 KSB/AFB  
 valve > Volt: 12  
 Shutoff  
 electromagnet>Volt: 12  
  
 Supply-pump pressure characteristic:  
  
 1st speed 1/min: 750  
 Supply-pump  
 pressure> bar: 4.40...5.00  
 > bar: -  
 Shutoff  
 electromagnet>Volt: 12  
 2nd speed 1/min: 1250  
 Supply-pump  
 pressure> bar: 5.90...6.50  
 Shutoff  
 electromagnet>Volt: 12  
 3rd speed 1/min: 2000  
 Supply-pump  
 pressure> bar: 7.90...8.50  
 > bar: -  
 Shutoff  
 electromagnet>Volt: 12  
  
 Overflow quantity at overflow valve:  
  
 1st speed 1/min: 750  
 Shutoff  
 electromagnet>Volt: 12  
 Overflow : 41.70...86.10  
 quantity> cm3/10s: (26.70...101.10)  
 2nd speed 1/min: 2300  
 Shutoff  
 electromagnet>Volt: 12  
 Overflow : 55.60...139.00  
 quantity> cm3/10s: (40.60...154.00)  
  
 Delivery-quant. and breakaway char.:  
  
 2nd speed 1/min: 2800

Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 0.00...5.00  
 > 1000s.: (0.00...5.00)  
 5th speed 1/min: 2600  
 Shutoff  
 electromagnet>Volt: 12  
 Del. quantity cm3/: 20.00...26.00  
 > 1000s.: (19.00...27.00)  
 8th speed 1/min: 2500  
 Shutoff  
 electromagnet>Volt: 12  
 Del. quantity cm3/: 31.50...39.50  
 > 1000s.: (30.50...40.50)  
 9th speed 1/min: 2300  
 Shutoff  
 electromagnet>Volt: 12  
 Del. quantity cm3/: 40.00...42.00  
 > 1000s.: (38.70...43.30)  
 10th speed 1/min: 2000  
 Shutoff  
 electromagnet>Volt: 12  
 Del. quantity cm3/: 39.30...41.30  
 > 1000s.: (38.00...42.60)  
 12th speed 1/min: 1250  
 Shutoff  
 electromagnet>Volt: 12  
 Del. quantity cm3/: 36.90...37.90  
 > 1000s.: (35,1...39.7)  
 15th speed 1/min: 1000  
 Shutoff  
 electromagnet>Volt: 12  
 Del. quantity cm3/: 36.20...39.20  
 > 1000s.: (35.40...40.00)  
 20th speed 1/min: 750  
 Shutoff  
 electromagnet>Volt: 12  
 Del. quantity cm3/: 35.00...38.00  
 > 1000s.: (34.20...38.80)  
  
 Electr. shutoff:  
  
 1st speed 1/min: 385  
 Del. quantity cm3/: 0.00...3.00  
 > 1000s.: (0.00...3.00)  
 Shutoff  
 electromagnet>volt: -  
  
 Damper set qty.:  
  
 LFG-setting:  
  
 Idle delivery:  
  
 1st speed 1/min: 385  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 12.00...16.00

> 1000s.: (10.0...18.00)

High Idle:

1st speed 1/mi: 435  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 10.0...14.00  
> 1000s.: (8.00...16.00)

Rest delivery:

1st speed 1/min: 450  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 3.00...7.00  
> 1000s.: (1.00...9.00)

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1250  
Inj.-qty. cm<sup>3</sup>/ : -6.1...8.1 "  
difference> 1000s.: -  
Shutoff  
electromagnet>Volt: 12  
2nd speed 1/min: 1250  
Inj.-qty. cm<sup>3</sup>/: 2.00...8.0 Z\*  
difference> 1000s.: -  
Shutoff  
electromagnet Volt: 12.0  
3rd speed 1/min: 1250  
Charge press. hPa: ALFB  
Inj.-qty. cm<sup>3</sup>/: 2.0...8.0 Z\*\*  
difference> 1000s.: -  
Shutoff  
electromagnet>Volt: 12.0

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):

1st speed 1/min: 1250  
TD-travel : -1.0...1.4 '  
difference> mm: -  
Shutoff  
electromagnet>Volt: 12  
3rd speed 1/min: 1250  
Charge press. hPa: ALFB  
TD-travel : 0.0...0.6 \*\*  
difference> mm: -  
Shutoff  
electromagnet>Volt: 12.0

SP press.-dif.measurement:

pompa di mandata (FP):  
1st speed 1/min: 1250  
Supply pump-  
pressure > : - 0.1...0.3 "  
difference> bar: -  
Shutoff  
electromagnet>Volt: 12.0

Part-load del.at 3rd inj.-qty.  
terza fermo della portata  
stop (EGR set)  
scarico) (ARF)  
gaz d'échappement-ARF)  
Spacing mm: 12.0

1st speed 1/min: 1250  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 22.5...23.5 \*  
> 1000s.: (20.5...25.5)

Automatic starting fuel delivery:

1st speed 1/min: 200  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 45.00...95.00  
> 1000s.: (45.00...95.00)

2nd speed 1/min: 350  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 15.00...45.00  
> 1000s.: (15.00...45.00)

4th speed 1/min: 100  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 45.00...75.00  
> 1000s.: (45.00...75.00)

Shutoff electromagnet:

Cut-in  
>min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: 3.6...3.8  
KF mm: 6.0  
MS mm: 0.6...1.0  
XK mm: A =0,8..3.0  
XL mm: MIKROSCH.  
Ya mm: 37.2...41.2  
Yb mm: 61.3...69.7

Remarks:

:  
:  
Z = Absolute delivery

Ya = Distance between VE flange and  
speed-control lever in idle  
position  
Measurement point = edge of control

Lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position

Measurement point = edge of control lever on distributor-head end

Permissible port/port scatter with stop test, electrical = max. 5.0 ccm/1000 S.





BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
Edition : 01.08.95
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/9F2100R547-1
Type number : 0 460 494 400
Customer Part-No. :

Customer-specific information
Customer : FIAT-AUTO

Engine : M721 CT19.N

Power KW: 60

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 022

Opening
Pressure> bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 450

Start of delivery
Prestroke mm: -
> (from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value mm: 5,80...6,20
AFB/AFB
valve > Volt: 12.0

Shutoff
electromagnet>Volt: 12.0

Supply-pump pressure

Speed 1/min: 1500
Charge press hPa: 1000
Setting value bar: 5.80...6.40
KSB/AFB
valve > Volt: 12.0
Shutoff
electromagnet>Volt: 12.0

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm3/
> 1000S.: 45.50...46.50
KSB/AFB
valve > Volt: 12.0
Shutoff
electromagnet>Volt: 12.0
Dispersion cm3/: 2.5
> 1000S.: (2.5)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm3/
> 1000S.: 41.00...42.00
KSB/AFB
valve > Volt: 12.0
Shutoff
electromagnet>Volt: 12.0

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Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm3/
> 1000S.: 14.5...18.5
KSB/AFB
valve > Volt: 12.0
Shutoff
electromagnet>Volt: 12.0
Del. quantity cm3/: 2.5
> 1000S.: (2.5)

Residual-Delivery Setting

Speed 1/min: 600
Del. quantity cm3/
> 1000S.: 4.00...6.00
KSB/AFB
valve > Volt: 12.0
Shutoff
electromagnet Volt: 12.0

Full-load speed regulation

Speed 1/min: 2300  
Charge press hPa: 1000  
Del. quantity cm3/  
> 1000S.: 31.00...37.00  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0

Start:

Speed 1/min: 100  
Del. quantity cm3/  
mind> 1000S.: 50.00...80.00  
KSB/AFB  
Valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1500  
Charge press hPa: -  
Inj.-qty. cm3/  
difference> 1000S.: - 10.0...18.0 \*  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
TD-travel dif.measurement

1.Speed 1/min: 1500  
Charge press hPa: -  
TD-travel  
difference> mm: - 0.8...1.0 \*  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500  
Charge press hPa: 1000  
TD travel mm: 3.2...4.8 A  
> mm: (2.5...5.5) A  
KSB/AFB  
valve > Volt: -  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1000  
Charge press hPa: 1000  
TD travel mm: 4.5...7.5 B  
> mm: (4.0...8.0) B  
KSB/AFB  
valve > Volt: -  
Shutoff

electromagnet>Volt: 12.0  
3rd speed 1/min: 800  
Charge press hPa: 1000  
TD travel mm: 1.70...2.50  
> mm: (1.40...2.80)  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
4th speed 1/min: 1500  
Charge press hPa: 1000  
TD travel mm: 5.80...6.20  
> mm: (5.40...6.60)  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
5th speed 1/min: 2100  
Charge press. hPa: 1000  
TD travel mm: 8.60...9.40  
> mm: (8.30...9.70)

Supply-pump pressure characteristic:

1st speed 1/min: 800  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 3.70...4.30  
> bar: -  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1500  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 5.80...6.40  
> bar: -  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
3rd speed 1/min: 2100  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 7.50...8.10  
> bar: -  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Charge press. hPa: -  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0

Overflow : 75.00...119.50  
quantity> cm3/10s: (50.00...134.50)  
2nd speed 1/min: 2100  
Charge press. hPa: 1000  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 97.30...180.70  
quantity> cm3/10s: (82.30...195.70)

Delivery-quant. and breakaway char.:

1st speed 1/min: 900  
Charge-air pressure-setting  
point> hPa: 350  
LDA-stroke mm: 5.2  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 46.00...47.00  
> 1000S.: (44.00...49.00)  
2nd speed 1/min: 2650  
Charge press. hPa: 1000  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm3/: 0.00...7.00  
> 1000S.: -  
3rd speed 1/min: 2450  
Charge press. hPa: 1000  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 13.0...21.0  
> 1000S.: (12.0...22.0)  
4th speed 1/min: 2300  
Charge press. hPa: 1000  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 31.0...37.0  
> 1000S.: (29.0...39.0)  
5th speed 1/min: 2100  
Charge press. hPa: 1000  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 45.00...48.00  
> 1000S.: (44.00...49.00)  
6th speed 1/min: 1500  
Charge press. hPa: 1000  
KSB/AFB  
valve > Volt: 12.0

Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 45.5...46.5  
> 1000S.: (44.0...48.0)  
7th speed 1/min: 900  
Charge press. hPa: 1000  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 47.0...50.0  
> 1000S.: (46.0...51.0)  
8th speed 1/min: 600  
Charge press. hPa: -  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 41.0...42.0  
> 1000S.: (39.0...44.0)

Electr. shutoff:

1st speed 1/min: 450  
Del. quantity cm3/: 0.00...3.00  
> 1000S.: -  
Shutoff  
electromagnet>volt: -  
KSB/AFB  
valve > Volt: 12.0

Damper set qty.:

LFG-setting:

Idle delivery:

1st speed 1/min: 450  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm3/: 14.50...18.50  
> 1000S.: (12.50...20.50)

Rest delivery:

1st speed 1/min: 600  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 4.00...6.00  
> 1000S.: (3.00...7.00)  
2nd speed 1/min: 500  
KSB/AFB  
valve > Volt: 12.0  
Shutoff

electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 5.50...8.50  
> 1000S.: -

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1500  
Charge press. hPa: -  
Inj.-qty. cm<sup>3</sup>/ : - 9.0..11.0 "  
difference> 1000S.: -  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1500  
Charge press. hPa: -  
Inj.-qty. cm<sup>3</sup>/: 0.0...3.0 Z'  
difference> 1000S.: -  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet Volt: 12.0

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):  
1st speed 1/min: 1500  
Charge press. hPa: -  
TD-travel : -1.1...1.7 '  
difference> mm: -  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0

SP press.-dif.measurement:  
pompa di mandata (FP):  
1st speed 1/min: 1500  
Charge press. hPa: -  
Supply pump-  
pressure > : - 0.1...0.3 "  
difference> bar: -  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0

Part-load del.at 3rd inj.-qty.  
terza fermo della portata  
stop (EGR set)  
scarico) (ARF)  
gaz d'échappement-ARF)  
Spacing mm: 12.0

1st speed 1/min: 1000  
Charge press. hPa: 1000  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0

Del. quantity cm<sup>3</sup>/: 19.00...21.00  
> 1000S.: (17.50...22.50)

Automatic starting fuel delivery:

1st speed 1/min: 220  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 52.00...78.00  
> 1000S.: -

2nd speed 1/min: 350  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 35.00...45.00  
> 1000S.: -

3rd speed 1/min: 100  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 50.0...80.0  
> 1000S.: -

Shutoff electromagnet:

Cut-in  
>min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: 3.2...3.4  
KF mm: 5.2...5.6  
MS mm: 1.0...1.4  
LDA stroke mm: 5.2  
Ya mm: 37.2...39.2  
Yb mm: 36.6...45.4

Ajustement Potentiometer:

Angle for  
pot. > °: 20.0  
Supply voltage  
pot. > volt: 5.0  
Output volt  
pot. > volt: 1.85

Remarks:

:  
:  
Ya = Distance between VE flange and  
speed-control lever in idle  
position

Measurement point = edge of control  
lever on drive end

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position

Measurement point = edge of control  
lever on distributor-head end

Z = Absolute delivery



# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA  
Edition : 01.08.95  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/9F2100R548-1  
Type number : 0 460 494 402  
Customer Part-No. :

Customer-specific information  
Customer : FIAT-AUTO

Engine : M721 CT19.N

Power KW: 60

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil  
return>temp. > °C  
with>thermometer> : 40.00...48.00  
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly> : 1 688 901 022

Opening  
Pressure> bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall>thickness : 2.00  
x Length> mm: 450

Start of delivery  
Prestroke mm: -  
> (from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500  
Charge press. hPa: 1000  
Setting value mm: 5,80...6,20  
AFB/AFB  
valve > Volt: 12.0

Shutoff  
electromagnet>Volt: 12.0

Supply-pump pressure

Speed 1/min: 1500  
Charge press hPa: 1000  
Setting value bar: 5.80...6.40  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0

Full-load del. with charge press.:

Speed 1/min: 1500  
Charge press. hPa: 1000  
Del. quantity cm3/  
> 1000S.: 45.50...46.50  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
Dispersion cm3/: 2.5  
> 1000S.: (2.5)

Full-load del. w/out charge press.:

Speed 1/min: 600  
Del. quantity cm3/  
> 1000S.: 41.00...42.00  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0

Low-idle speed regulation

Speed 1/min: 450  
Del. quantity cm3/  
> 1000S.: 14.5...18.5  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 2.5  
> 1000S.: (2.5)

Residual-Delivery Setting

Speed 1/min: 600  
Del. quantity cm3/  
> 1000S.: 4.00...6.00  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet Volt: 12.0

Full-load speed regulation

Speed 1/min: 2300  
Charge press hPa: 1000  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 31.00...37.00  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/  
mind> 1000S.: 50.00  
KSB/AFB  
Valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1500  
Charge press hPa: -  
Inj.-qty. cm<sup>3</sup>/  
difference> 1000S.: - 10.0...18.0 \*  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
TD-travel dif.measurement

1.Speed 1/min: 1500  
Charge press hPa: -  
TD-travel  
difference> mm: - 0.8...1.0 \*  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500  
Charge press hPa: 1000  
TD travel mm: 3.2...4.8 A  
> mm: (2.5...5.5) A  
KSB/AFB  
valve > Volt: -  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1000  
Charge press hPa: 1000  
TD travel mm: 4.5...7.5 B  
> mm: (4.0...8.0) B  
KSB/AFB  
valve > Volt: -  
Shutoff

electromagnet>Volt: 12.0  
3rd speed 1/min: 800  
Charge press hPa: 1000  
TD travel mm: 1.70...2.50  
> mm: (1.40...2.80)  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
4th speed 1/min: 1500  
Charge press hPa: 1000  
TD travel mm: 5.80...6.20  
> mm: (5.40...6.60)  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
5th speed 1/min: 2100  
Charge press. hPa: 1000  
TD travel mm: 8.60...9.40  
> mm: (8.30...9.70)

Supply-pump pressure characteristic:

1st speed 1/min: 800  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 3.70...4.30  
> bar: -  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1500  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 5.80...6.40  
> bar: -  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
3rd speed 1/min: 2100  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 7.50...8.10  
> bar: -  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Charge press. hPa: -  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0

Overflow : 75.00...119.50  
quantity> cm3/10s: (50.00...134.50)  
2nd speed 1/min: 2100  
Charge press. hPa: 1000  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 97.30...180.70  
quantity> cm3/10s: (82.30...195.70)

Delivery-quant. and breakaway char.:

1st speed 1/min: 900  
Charge-air pressure-setting  
point> hPa: 350  
LDA-stroke mm: 5.2  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 46.00...47.00  
> 1000S.: (44.00...49.00)  
2nd speed 1/min: 2650  
Charge press. hPa: 1000  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm3/: 0.00...7.00  
> 1000S.: -  
3rd speed 1/min: 2450  
Charge press. hPa: 1000  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 13.0...21.0  
> 1000S.: (12.0...22.0)  
4th speed 1/min: 2300  
Charge press. hPa: 1000  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 31.0...37.0  
> 1000S.: (29.0...39.0)  
5th speed 1/min: 2100  
Charge press. hPa: 1000  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 45.00...48.00  
> 1000S.: (44.00...49.00)  
6th speed 1/min: 1500  
Charge press. hPa: 1000  
KSB/AFB  
valve > Volt: 12.0

Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 45.5...46.5  
> 1000S.: (44.0...48.0)  
7th speed 1/min: 900  
Charge press. hPa: 1000  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 47.0...50.0  
> 1000S.: (46.0...51.0)  
8th speed 1/min: 600  
Charge press. hPa: -  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 41.0...42.0  
> 1000S.: (39.0...44.0)

Electr. shutoff:

1st speed 1/min: 450  
Del. quantity cm3/: 0.00...3.00  
> 1000S.: -  
Shutoff  
electromagnet>volt: -  
KSB/AFB  
valve > Volt: 12.0

Damper set qty.:

LFG-setting:

Idle delivery:

1st speed 1/min: 450  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm3/: 14.50...18.50  
> 1000S.: (12.50...20.50)

Rest delivery:

1st speed 1/min: 600  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 4.00...6.00  
> 1000S.: (3.00...7.00)  
2nd speed 1/min: 500  
KSB/AFB  
valve > Volt: 12.0  
Shutoff



electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 5.50...8.50  
> 1000S.: -

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1500  
Charge press. hPa: -  
Inj.-qty. cm<sup>3</sup>/ : - 9.0..11.0 "  
difference> 1000S.: -  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1500  
Charge press. hPa: -  
Inj.-qty. cm<sup>3</sup>/: 0.0...3.0 2'  
difference> 1000S.: -  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet Volt: 12.0

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):  
1st speed 1/min: 1500  
Charge press. hPa: -  
TD-travel : -1.1...1.7 '  
difference> mm: -  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0

SP press.-dif.measurement:  
pompa di mandata (FP):  
1st speed 1/min: 1500  
Charge press. hPa: -  
Supply pump-  
pressure > : - 0.1...0.3 "  
difference> bar: -  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0

Part-load del.at 3rd inj.-qty.  
terza fermo della portata  
stop (EGR set)  
scarico) (ARF)  
gaz d'échappement-ARF)  
Spacing mm: 12.0

1st speed 1/min: 1000  
Charge press. hPa: 1000  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0

Del. quantity cm<sup>3</sup>/: 19.00...21.00  
> 1000S.: (17.50...22.50)

Automatic starting fuel delivery:

1st speed 1/min: 220  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 52.00...78.00  
> 1000S.: -

2nd speed 1/min: 350  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 35.00...45.00  
> 1000S.: -

3rd speed 1/min: 100  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 50.0...80.0  
> 1000S.: -

Shutoff electromagnet:

Cut-in  
>min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: 3.2...3.4  
KF mm: 5.2...5.6  
MS mm: 1.0...1.4  
LDA stroke mm: 5.2  
Ya mm: 37.2...39.2  
Yb mm: 36.6...45.4

Ajustement Potentiometer:

Angle for  
pot. > °: 20.0  
Supply voltage  
pot. > volt: 5.0  
Output volt  
pot. > volt: 1.85

Remarks:

:  
:  
Ya = Distance between VE flange and  
speed-control lever in idle  
position

Measurement point = edge of control  
lever on drive end

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position

Measurement point = edge of control  
lever on distributor-head end

Z = Absolute delivery



BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : NIS  
Edition : 03.08.95  
replaces : -  
Calibrating oil : ISO-4113  
Injection pump : VE4/9F2150R637  
Type number : 0 460 494 403  
Customer Part-No. : 16700 8C001

Customer-specific information  
Customer : MISSAN - MISA

Engine : GX-3

Power KW: 53

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return>temp. > °C  
with>thermometer> : 40.00...48.00  
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly> : 1 688 901 022

Opening  
Pressure> bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall>thickness : 2.00  
x Length> mm: 450

Start of delivery  
Prestroke mm: -  
> (from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1200  
Setting value mm: 3.00...3.40  
Shutoff  
electromagnet>Volt: 12.0

Supply-pump pressure

Speed 1/min: 1200  
Setting value bar: 5.60...6.20  
Shutoff  
electromagnet>Volt: 12.0

Full-load del. w/out charge press.:

Speed 1/min: 2150  
Del. quantity cm3/  
> 1000S.: 44.00...45.00  
Shutoff  
electromagnet>Volt: 12.0  
Dispersion cm3/: 2.5  
> 1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 350  
Del. quantity cm3/  
> 1000S.: 6.5...10.5  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 2.5  
> 1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2500  
Del. quantity cm3/  
> 1000S.: 12.00...18.00  
Shutoff  
electromagnet>Volt: 12.0

Start:

Speed 1/min: 100  
Del. quantity cm3/: 45.00...75.00  
mind> 1000S.: 45.00  
Shutoff  
electromagnet>Volt: 12.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 900  
TD travel mm: 0.8...1.6  
> mm: -  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1200  
TD travel mm: 3.0...3.4  
> mm: (2.5...3.9)  
Shutoff  
electromagnet>Volt: 12.0  
3rd speed 1/min: 2150  
TD travel mm: 8.80...9.60  
> mm: (8.50...9.90)  
Shutoff

electromagnet>Volt: 12.0

Supply-pump pressure characteristic:

1st speed 1/min: 900

Supply-pump

pressure> bar: 4.70...5.30

> bar: -

Shutoff

electromagnet>Volt: 12.0

2nd speed 1/min: 1200

Supply-pump

pressure> bar: 5.60...6.20

> bar: -

Shutoff

electromagnet>Volt: 12.0

3rd speed 1/min: 2150

Supply-pump

pressure> bar: 8.20...8.80

> bar: -

Shutoff

electromagnet>Volt: 12.0

Overflow quantity at overflow valve:

1st speed 1/min: 600

Shutoff

electromagnet>Volt: 12.0

Overflow : 75.00...119.50

quantity> cm<sup>3</sup>/10s: (50.00...134.50)

2nd speed 1/min: 2150

Shutoff

electromagnet>Volt: 12.0

Overflow : 97.30...180.70

quantity> cm<sup>3</sup>/10s: (82.30...195.70)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 2700

Shutoff

electromagnet>Volt: 12.0

Del. quantity cm<sup>3</sup>/: 0.00...5.00

> 1000S.: -

2nd speed 1/min: 2500

Shutoff

electromagnet Volt: 12.0

Del. quantity cm<sup>3</sup>/: 12.0...18.0

> 1000S.: (10.5...19.5)

3rd speed 1/min: 2350

Shutoff

electromagnet>Volt: 12.0

Del. quantity cm<sup>3</sup>/: 29.3...37.3

> 1000S.: (27.8...38.8)

4th speed 1/min: 2150

Shutoff

electromagnet>Volt: 12.0

Del. quantity cm<sup>3</sup>/: 44.0...45.0

> 1000S.: (43.2...45.8)

5th speed 1/min: 1800

Shutoff

electromagnet>Volt: 12.0

Del. quantity cm<sup>3</sup>/: 42.60...45.60

> 1000S.: (41.60...46.60)

6th speed 1/min: 1200

Shutoff

electromagnet>Volt: 12.0

Del. quantity cm<sup>3</sup>/: 41.3...44.3

> 1000S.: (40.3...45.3)

7th speed 1/min: 900

Shutoff

electromagnet>Volt: 12.0

Del. quantity cm<sup>3</sup>/: 40.5...43.5

> 1000S.: (39.5...44.5)

8th speed 1/min: 600

Shutoff

electromagnet>Volt: 12.0

Del. quantity cm<sup>3</sup>/: 39.5...42.5

> 1000S.: (38.5...43.5)

Electr. shutoff:

1st speed 1/min: 350

Del. quantity cm<sup>3</sup>/: 0.00...3.00

> 1000S.: -

Shutoff

electromagnet>volt: -

Idle delivery:

1st speed 1/min: 350

Shutoff

electromagnet>Volt: 12.0

Del. quantity cm<sup>3</sup>/: 6.5...10.5

> 1000S.: (4.5...12.5)

2nd speed 1/min: 800

Shutoff

electromagnet>Volt: 12.0

Del. quantity cm<sup>3</sup>/: 0.00...5.00

> 1000S.: -

3rd speed 1/min: 500

Shutoff

electromagnet>Volt: 12.0

Del. quantity cm<sup>3</sup>/: 0.00...3.00

> 1000S.: -

4th speed 1/min: 250

Shutoff

electromagnet Volt: 12.0

Del. quantity cm<sup>3</sup>/: 27.0...33.0

> 1000S.: (25.0...35.0)

High Idle:

1st speed 1/mi: 500

Shutoff

electromagnet>Volt: 12.0

Del. quantity cm<sup>3</sup>/: 5.0...13.0

> 1000S.: TLA-E = 4,7MM

Automatic starting fuel delivery:

1st speed 1/min: 270  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 50.00...90.00  
> 1000S.: -

2nd speed 1/min: 400  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 10.00...50.00  
> 1000S.: -

3rd speed 1/min: 100  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 45.0...75.0  
> 1000S.: -

Shutoff electromagnet:

Cut-in  
>min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.2...3.4
KF	mm: 5.2...5.6
MS	mm: 1.1...1.3
FH	mm: 4.3
TLA-E	mm: 4.7
XK	mm: KSB=1,2MM
XL	mm: (SCHRAUBE)
Ya	mm: 35.1...39.1
Yb	mm: 59.9...70.1

Ajustement Potentiometer:

Angle for  
pot. > °: 25  
Supply voltage  
pot. > volt: 5.0  
Output volt  
pot. > volt: 0.8

Remarks:

⋮  
Ya = Distance between VE flange and  
speed-control lever in idle  
position  
Measurement point = edge of control  
lever on drive end

Yb = Distance between VE flange and

speed-control lever in rated speed  
position  
Measurement point = edge of control  
lever on distributor-head end

Permissible port/port scatter with  
stop test, electrical = max. 5.0  
ccm/1000 S.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : NIS
Edition : 03.08.95
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/9F2150R637-1
Type number : 0 460 494 404
Customer Part-No. : 16700 8C000

Customer-specific information
Customer : MISSAN - MISA

Engine : GX-3

Power KW: 53

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 022

Opening
Pressure> bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 450

Start of delivery
Prestroke mm: -
> (from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1200
Setting value mm: 3.00...3.40
Shutoff
electromagnet>Volt: 12.0

Supply-pump pressure

Speed 1/min: 1200
Setting value bar: 5.60...6.20
Shutoff
electromagnet>Volt: 12.0

Full-load del. w/out charge press.:

Speed 1/min: 2150
Del. quantity cm3/
> 1000S.: 44.00...45.00
Shutoff
electromagnet>Volt: 12.0
Dispersion cm3/: 2.5
> 1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
> 1000S.: 6.5...10.5
Shutoff
electromagnet>Volt: 12.0
Del. quantity cm3/: 2.5
> 1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 450
Del. quantity cm3/
> 1000S.: 6.00...10.0
Shutoff
electromagnet Volt: 12.0

Full-load speed regulation

Speed 1/min: 2500
Del. quantity cm3/
> 1000S.: 12.00...18.00
Shutoff
electromagnet>Volt: 12.0

Start:

Speed 1/min: 100
Del. quantity cm3/: 45.00...75.00
mind> 1000S.: 45.00
Shutoff
electromagnet>Volt: 12.0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 900
TD travel mm: 0.3...1.6
> mm: -
electromagnet>Volt: 12.0
2nd speed 1/min: 1200

TD travel mm: 3.0...3.4  
 > mm: (2.5...3.9)  
 Shutoff  
 electromagnet>Volt: 12.0  
 3rd speed 1/min: 2150  
 TD travel mm: 8.80...9.60  
 > mm: (8.50...9.90)  
 Shutoff  
 electromagnet>Volt: 12.0

Supply-pump pressure characteristic:

1st speed 1/min: 900  
 Supply-pump  
 pressure> bar: 4.70...5.30  
 > bar: -  
 Shutoff  
 electromagnet>Volt: 12.0  
 2nd speed 1/min: 1200  
 Supply-pump  
 pressure> bar: 5.60...6.20  
 > bar: -  
 Shutoff  
 electromagnet>Volt: 12.0  
 3rd speed 1/min: 2150  
 Supply-pump  
 pressure> bar: 8.20...8.80  
 > bar: -  
 Shutoff  
 electromagnet>Volt: 12.0

Overflow quantity at overflow valve:

1st speed 1/min: 600  
 Shutoff  
 electromagnet>Volt: 12.0  
 Overflow : 75.00...119.50  
 quantity> cm<sup>3</sup>/10s: (50.00...134.50)  
 2nd speed 1/min: 2150  
 Shutoff  
 electromagnet>Volt: 12.0  
 Overflow : 97.30...180.70  
 quantity> cm<sup>3</sup>/10s: (82.30...195.70)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2700  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 0.00...5.00  
 > 1000S.: -  
 2nd speed 1/min: 2500  
 Shutoff  
 electromagnet Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 12.0...18.0  
 > 1000S.: (10.5...19.5)  
 3rd speed 1/min: 2350  
 Shutoff  
 electromagnet>Volt: 12.0

Del. quantity cm<sup>3</sup>/: 29.3...37.3  
 > 1000S.: (27.8...38.8)  
 4th speed 1/min: 2150  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 44.0...45.0  
 > 1000S.: (43.2...45.8)  
 5th speed 1/min: 1800  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 42.60...45.60  
 > 1000S.: (41.60...46.60)  
 6th speed 1/min: 1200  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 41.3...44.3  
 > 1000S.: (40.3...45.3)  
 7th speed 1/min: 900  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 40.5...43.5  
 > 1000S.: (39.5...44.5)  
 8th speed 1/min: 600  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 39.5...42.5  
 > 1000S.: (38.5...43.5)

Electr. shutoff:

1st speed 1/min: 350  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 > 1000S.: -  
 Shutoff  
 electromagnet>volt: -

Idle delivery:

1st speed 1/min: 350  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 6.5...10.5  
 > 1000S.: (4.5...12.5)  
 2nd speed 1/min: 800  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 0.00...5.00  
 > 1000S.: -  
 3rd speed 1/min: 500  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 > 1000S.: -  
 4th speed 1/min: 250  
 Shutoff  
 electromagnet Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 27.0...33.0  
 > 1000S.: (25.0...35.0)

High Idle:

1st speed 1/mi: 500  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 5.0...13.0  
> 1000S.: TLA-E 4,7MM

Automatic starting fuel delivery:

1st speed 1/min: 270  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 50.00...90.00  
> 1000S.: -

2nd speed 1/min: 400  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 10.00...50.00  
> 1000S.: -

3rd speed 1/min: 100  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 45.0...75.0  
> 1000S.: -

Shutoff electromagnet:

Cut-in  
>min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.2...3.4
KF	mm: 5.2...5.6
MS	mm: 1.1...1.3
FH	mm: 4.3
TLA-E	mm: 4.7
XK	mm: KSB=1,2MM
XL	mm: (SCHRAUBE)
Ya	mm: 35.1...39.1
Yb	mm: 59.9...70.1

Remarks:

:  
:

Ya = Distance between VE flange and speed-control lever in idle position  
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed

position

Measurement point = edge of control lever on distributor-head end

Permissible port/port scatter with stop test, electrical = max. 5.0 ccm/1000 S.



# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN  
Edition : 03.08.95  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/9F2400R486-2  
Type number : 0 460 494 405  
Customer Part-No. :

Customer-specific information  
Customer : RENAULT

Engine : G8T-790 CA LAGUNA

Power KW: 60

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return>temp. > °C  
with>thermometer> : 40.00...48.00  
Electronically> : 42.00...50.00

Inlet press., bar : 0.30. .0.40

Calibrating nozzle-holder  
assembly> : 1 688 901 022

Opening  
Pressure> bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall>thickness : 2.00  
x Length> mm: 450

Start of delivery  
Prestroke mm: -  
> (from BDC): -

Injection-pump setting values  
Test specifications in parentheses

## Timing-device travel

Speed 1/min: 1250  
Setting value mm: 2.30...2.70  
Shutoff  
electromagnet>Volt: 12.0

## Supply-pump pressure

Speed 1/min: 1250  
Setting value bar: 5.90...6.50  
Shutoff  
electromagnet>Volt: 12.0

## Full-load del. w/out charge press.:

Speed 1/min: 1250  
Del. quantity cm3/  
> 1000S.: 36.90...37.90  
Shutoff  
electromagnet>Volt: 12.0  
Dispersion cm3/: 2.5  
> 1000S.: (3.0)

## Low-idle speed regulation

Speed 1/min: 385  
Del. quantity cm3/  
> 1000S.: 12.0...16.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 2.5  
> 1000S.: (2.5)

## Residual-Delivery Setting

Speed 1/min: 450  
Del. quantity cm3/  
> 1000S.: 6.00...10.0  
Shutoff  
electromagnet Volt: 12.0

## Full-load speed regulation

Speed 1/min: 2600  
Del. quantity cm3/  
> 1000S.: 20.00...26.00  
Shutoff  
electromagnet>Volt: 12.0

## Start:

Speed 1/min: 100  
Del. quantity cm3/: 45.00...75.00  
mind> 1000S.: 45.00  
Shutoff  
electromagnet>Volt: 12.0

## Load-dependent start of delivery: Inj.-qty.dif.measurement:

Speed 1/min: 1250  
Inj.-qty. cm3/  
difference> 1000S.: - 7,4...11.4 \*  
Shutoff  
electromagnet>Volt: 12.0  
TD-travel dif.measurement

1.Speed 1/min: 1500  
TD-travel  
difference> mm: - 0.7...0.9 \*  
Shutoff  
electromagnet>Volt: 12.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750  
TD travel mm: 0.0...2.2  
> mm: -  
KSB/AFB  
valve > Volt: 12.0  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1000  
TD travel mm: 0.6...1.4  
> mm: (0.4...1.6)  
KSB/AFB  
valve > Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
3rd speed 1/min: 2000  
TD travel mm: 6.00...6.80  
> mm: (5.80...7.00)  
Shutoff  
electromagnet>Volt: 12.0  
4th speed 1/min: 1250  
TD travel mm: 2.3... 2.7  
> mm: (2.0...3.0)

Supply-pump pressure characteristic:

1st speed 1/min: 750  
Supply-pump  
pressure> bar: 4.40...5.00  
> bar: -  
Shutoff  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1250  
Supply-pump  
pressure> bar: 5.90...6.50  
> bar: -  
Shutoff  
electromagnet>Volt: 12.0  
3rd speed 1/min: 2000  
Supply-pump  
pressure> bar: 7.90...8.50  
> bar: -  
Shutoff  
electromagnet>Volt: 12.0

Overlow quantity at overflow valve:

1st speed 1/min: 750  
Shutoff  
electromagnet>Volt: 12.0

Overflow : 75.00...119.50  
quantity> cm3/10s: (50.00...134.50)  
2nd speed 1/min: 2300  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 97.30...180.70  
quantity> cm3/10s: (82.30...195.70)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 2800  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 0.00...5.00  
> 1000S.: -  
2nd speed 1/min: 2600  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm3/: 20.0...26.0  
> 1000S.: (19.0...27.0)  
3rd speed 1/min: 2500  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 31.5...39.5  
> 1000S.: (30.5...40.5)  
4th speed 1/min: 2300  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 40.0...42.0  
> 1000S.: (38.7...43.3)  
5th speed 1/min: 2000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 39.30...41.30  
> 1000S.: (38.00...42.60)  
6th speed 1/min: 1250  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 36.9...37.9  
> 1000S.: (35.1...39.7)  
7th speed 1/min: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 36.2...39.2  
> 1000S.: (35.4...40.0)  
8th speed 1/min: 750  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 35.0...38.0  
> 1000S.: (34.2...38.8)

Electr. shutoff:

1st speed 1/min: 385  
Del. quantity cm3/: 0.00...3.00  
> 1000S.: -  
Shutoff

electromagnet>volt: -  
 Damper set qty.:  
 LFG-setting:  
 Idle delivery:  
 1st speed 1/min: 385  
 Shutoff  
 electromagnet Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 12.00...16.00  
 > 1000S.: (10.00...18.00)  
 High Idle:  
 1st speed 1/mi: 435  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 10.0...14.0  
 > 1000S.: (8.00...16.00)  
 Rest delivery:  
 1st speed 1/min: 450  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 6.00...10.0  
 > 1000S.: -  
 Load-dependent start of delivery:  
 Inj.-qty.dif.measurement:  
 1st speed 1/min: 1250  
 Inj.-qty. cm<sup>3</sup>/ : - 6.1...8.1 "  
 difference> 1000S.: -  
 Shutoff  
 electromagnet>Volt: 12.0  
 2nd speed 1/min: 1250  
 Inj.-qty. cm<sup>3</sup>/: 2.0...8.0 Z'  
 difference> 1000S.: -  
 Shutoff  
 electromagnet Volt: 12.0  
 3rd speed 1/min: 1250  
 Charge press. hPa: ALFB  
 Inj.-qty. cm<sup>3</sup>/: 2.0...8.0 Z:  
 difference> 1000S.: -  
 KSB/AFB  
 valve > Volt: 12.0  
 Shutoff  
 electromagnet>Volt: 12.0  
 TD-travel dif.measurement:  
 correttore anticipo iniezione (SV):  
 1st speed 1/min: 1500  
 TD-travel : - 0.9...1.5 '  
 difference> mm: -  
 Shutoff  
 electromagnet>Volt: 12.0  
 2nd speed 1/min: 1250

Charge press. hPa: ALFB  
 TD-travel : 0.0...0.6 :  
 difference> mm: -  
 KSB/AFB  
 valve > Volt: 12.0  
 Shutoff  
 electromagnet>Volt: 12.0  
 SP press.-dif.measurement:  
 pompa di mandata (FP):  
 1st speed 1/min: 1250  
 Supply pump-  
 pressure > : - 0.1...0.3 "  
 difference> bar: -  
 Shutoff  
 electromagnet>Volt: 12.0  
 Part-load del.at 3rd inj.-qty.  
 terza fermo della portata  
 stop (EGR set)  
 scarico) (ARF)  
 gaz d'échappement-ARF)  
 Spacing mm: 12.0  
 1st speed 1/min: 125  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 22.5..23.5 \*\*  
 > 1000S.: (20.5...25.5)  
 Automatic starting fuel delivery:  
 1st speed 1/min: 200  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 45.00...95.00  
 > 1000S.: -  
 2nd speed 1/min: 350  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 15.00...45.00  
 > 1000S.: -  
 3rd speed 1/min: 100  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 45.0...75.0  
 > 1000S.: -  
 Shutoff electromagnet:  
 Cut-in  
 >min voltage : 10.0  
 Rated voltage : 12.0  
 Mounting and assembly dimensions:  
 Designation  
 K mm: 3.6...3.8

KF	mm: KOT
MS	mm: 0.8...1.0
XK	mm: MIKROSCH.
XL	mm: 0.8...3.0**
Ya	mm: 27.8...31.8
Yb	mm: 52.1...61.9

Remarks:

⋮

Ya = Distance between VE flange and speed-control lever in idle position

Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position

Measurement point = edge of control lever on distributor-head end

Z = Absolute delivery

On initial measurement, screw in residual-quantity adjusting screw 2 mm.

Following pump adjustment, screw out residual-quantity adjusting screw 2 mm.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN
Edition : 03.08.95
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/9F2400R486-3
Type number : 0 460 494 406
Customer Part-No. :

Customer-specific information
Customer : RENAULT

Engine : G8T-790 CA LAGUNA

Power KW: 60

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 022

Opening
Pressure> bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 450

Start of delivery
Prestroke mm: -
> (from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 2.30...2.70
Shutoff
electromagnet>Volt: 12.0

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 5.90...6.50
Shutoff
electromagnet>Volt: 12.0

Full-load del. w/out charge press.:

Speed 1/min: 1250
Del. quantity cm3/
> 1000S.: 36.90...37.90
Shutoff
electromagnet>Volt: 12.0
Dispersion cm3/: 2.5
> 1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 385
Del. quantity cm3/
> 1000S.: 12.0...16.0
Shutoff
electromagnet>Volt: 12.0
Del. quantity cm3/: 2.5
> 1000S.: (2.5)

Residual-Delivery Setting

Speed 1/min: 450
Del. quantity cm3/
> 1000S.: 6.00...10.0
Shutoff
electromagnet Volt: 12.0

Full-load speed regulation

Speed 1/min: 2600
Del. quantity cm3/
> 1000S.: 20.00...26.00
Shutoff
electromagnet>Volt: 12.0

Start:

Speed 1/min: 100
Del. quantity cm3/: 45.00...75.00
mind> 1000S.: 45.00
Shutoff
electromagnet>Volt: 12.0

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Inj.-qty. cm3/
difference> 1000S.: - 7,4...11.4 \*
Shutoff
electromagnet>Volt: 12.0
TD-travel dif.measurement

1.Speed 1/min: 1500  
TD-travel  
difference> mm: - 0.7...0.9 \*  
Shutoff  
electromagnet>Volt: 12.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750  
TD travel mm: 0.0...2.2  
> mm: -  
KSB/AFB  
valve > Volt: 12.0  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1000  
TD travel mm: 0.6...1.4  
> mm: (0.4...1.6)  
KSB/AFB  
valve > Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
3rd speed 1/min: 2000  
TD travel mm: 6.00...6.80  
> mm: (5.80...7.00)  
Shutoff  
electromagnet>Volt: 12.0  
4th speed 1/min: 1250  
TD travel mm: 2.3...2.7  
> mm: (2.0...3.0)

Supply-pump pressure characteristic:

1st speed 1/min: 750  
Supply-pump  
pressure> bar: 4.40...5.00  
> bar: -  
Shutoff  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1250  
Supply-pump  
pressure> bar: 5.90...6.50  
> bar: -  
Shutoff  
electromagnet>Volt: 12.0  
3rd speed 1/min: 2000  
Supply-pump  
pressure> bar: 7.90...8.50  
> bar: -  
Shutoff  
electromagnet>Volt: 12.0

Overflow quantity at overflow valve:

1st speed 1/min: 750  
Shutoff  
electromagnet>Volt: 12.0

Overflow : 75.00...119.50  
quantity> cm3/10s: (50.00...134.50)  
2nd speed 1/min: 2300  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 97.30...180.70  
quantity> cm3/10s: (82.30...195.70)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2800  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 0.00...5.00  
> 1000S.: -  
2nd speed 1/min: 2600  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm3/: 20.0...26.0  
> 1000S.: (19.0...27.0)  
3rd speed 1/min: 2500  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 31.5...39.5  
> 1000S.: (30.5...40.5)  
4th speed 1/min: 2300  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 40.0...42.0  
> 1000S.: (38.7...43.3)  
5th speed 1/min: 2000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 39.30...41.30  
> 1000S.: (38.00...42.60)  
6th speed 1/min: 1250  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 36.9...37.9  
> 1000S.: (35.1...39.7)  
7th speed 1/min: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 36.2...39.2  
> 1000S.: (35.4...40.0)  
8th speed 1/min: 750  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 35.0...38.0  
> 1000S.: (34.2...38.8)

Electr. shutoff:

1st speed 1/min: 385  
Del. quantity cm3/: 0.00...3.00  
> 1000S.: -  
Shutoff

electromagnet>volt: -  
Damper set qty.:  
LFG-setting:  
Idle delivery:  
1st speed 1/min: 385  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 12.00...16.00  
> 1000S.: (10.00...18.00)  
High Idle:  
1st speed 1/mi: 435  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 10.0...14.0  
> 1000S.: (8.00...16.00)  
Rest delivery:  
1st speed 1/min: 450  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 6.00...10.0  
> 1000S.: -  
Load-dependent start of delivery:  
Inj.-qty.dif.measurement:  
1st speed 1/min: 1250  
Inj.-qty. cm<sup>3</sup>/ : - 6.1...8.1 "  
difference> 1000S.: -  
Shutoff  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1250  
Inj.-qty. cm<sup>3</sup>/: 2.0...8.0 Z'  
difference> 1000S.: -  
Shutoff  
electromagnet Volt: 12.0  
3rd speed 1/min: 1250  
Charge press. hPa: ALFB  
Inj.-qty. cm<sup>3</sup>/: 2.0...8.0 Z:  
difference> 1000S.: -  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
TD-travel dif.measurement:  
correttore anticipo iniezione (SV):  
1st speed 1/min: 1500  
TD-travel : - 0.9...1.5 '  
difference> mm: -  
Shutoff  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1250

Charge press. hPa: ALFB  
TD-travel : 0.0...0.6 :  
difference> mm: -  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0  
SP press.-dif.measurement:  
pompa di mandata (FP):  
1st speed 1/min: 1250  
Supply pump-  
pressure > : - 0.1...0.3 "  
difference> bar: -  
Shutoff  
electromagnet>Volt: 12.0  
Part-load del.at 3rd inj.-qty.  
terza fermo della portata  
stop (EGR set)  
scarico) (ARF)  
gaz d'échappement-ARF)  
Spacing mm: 12.0  
1st speed 1/min: 125  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 22.5..23.5 \*\*  
> 1000S.: (20.5...25.5)  
Automatic starting fuel delivery:  
1st speed 1/min: 200  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 45.00...95.00  
> 1000S.: -  
2nd speed 1/min: 350  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 15.00...45.00  
> 1000S.: -  
3rd speed 1/min: 100  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 45.0...75.0  
> 1000S.: -  
Shutoff electromagnet:  
Cut-in  
>min voltage : 10.0  
Rated voltage : 12.0  
Mounting and assembly dimensions:  
Designation  
K mm: 3.6...3.8

KF	mm: KOT
MS	mm: 0.8...1.0
XK	mm: MIKROSCH.
XL	mm: 0.8...3.0**
Ya	mm: 27.8...31.8
Yb	mm: 52.1...61.9

Remarks:

⋮

Ya = Distance between VE flange and speed-control lever in idle position

Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position

Measurement point = edge of control lever on distributor-head end

Z = Absolute delivery

On initial measurement, screw in residual-quantity adjusting screw 2 mm.

Following pump adjustment, screw out residual-quantity adjusting screw 2 mm.



# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA  
Edition : 01.08.95  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/9F2100R466-2  
Type number : 0 460 494 407  
Customer Part-No. :

Customer-specific information  
Customer : FIAT-AUTO

Engine : M718 NT19.L

Power KW: 66

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil  
return>temp. > °C  
with>thermometer> : 40.00...48.00  
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly> : 1 688 901 022

Opening  
Pressure> bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall>thickness : 2.00  
x Length> mm: 450

Start of delivery  
Prestroke mm: -  
> (from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000  
Charge press. hPa: 1000  
Setting value mm: 2.70...2.90  
Shutoff  
electromagnet>Volt: 12.0

Supply-pump pressure

Speed 1/min: 1000  
Charge press hPa: 1000  
Setting value bar: 4.50...5.10  
Shutoff  
electromagnet>Volt: 12.0

Full-load del. with charge press.:

Speed 1/min: 1500  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 51.50...52.50  
Shutoff  
electromagnet>Volt: 12.0  
Dispersion cm<sup>3</sup>/: 2.5  
> 1000S.: (2.5)

Full-load del. w/out charge press.:

Speed 1/min: 600  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 40.00...41.00  
Shutoff  
electromagnet>Volt: 12.0

Low-idle speed regulation

Speed 1/min: 450  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 12.0...16.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 2.5  
> 1000S.: (2.5)

Residual-Delivery Setting

Speed 1/min: 800  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 3.50...5.50  
Shutoff  
electromagnet Volt: 12.0

Full-load speed regulation

Speed 1/min: 2400  
Charge press hPa: 1000  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 23.00...29.00  
Shutoff  
electromagnet>Volt: 12.0

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 50.00...80.00  
mind> 1000S.: 50.00

Shutoff  
electromagnet>Volt: 12.0

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1500  
Charge press hPa: -  
Inj.-qty. cm<sup>3</sup>/  
difference> 1000s.: - 8.0...16.0 \*  
Shutoff  
electromagnet>Volt: 12.0  
TD-travel dif.measurement

1.Speed 1/min: 1500  
Charge press hPa: -  
TD-travel  
difference> mm: - 0.8...0.9 \*  
Shutoff  
electromagnet>Volt: 12.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000  
Charge press hPa: 1000  
TD travel mm: 2.7...2.9  
> mm: (2.2...3.4)  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1500  
Charge press hPa: 1000  
TD travel mm: 4.9...5.5  
> mm: (4.5...5.9)  
Shutoff  
electromagnet>Volt: 12.0  
3rd speed 1/min: 2100  
Charge press hPa: 1000  
TD travel mm: 7.60...8.20  
> mm: (7.20...8.60)  
Shutoff  
electromagnet>Volt: 12.0

Supply-pump pressure characteristic:

1st speed 1/min: 1000  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 4.50...5.10  
> bar: -  
Shutoff  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1500  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 5.90...6.50  
> bar: -  
Shutoff  
electromagnet>Volt: 12.0

3rd speed 1/min: 2100  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 7.50...8.10  
> bar: -

Shutoff  
electromagnet>Volt: 12.0

Overflow quantity at overflow valve:

1st speed 1/min: 800  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 75.00...119.50  
quantity> cm<sup>3</sup>/10s: (50.00...134.50)  
2nd speed 1/min: 2100  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 97.30...180.70  
quantity> cm<sup>3</sup>/10s: (82.30...195.70)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 750  
Charge-air pressure-setting  
point> hPa: 450  
LDA-stroke mm: 6.7  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 47.00...48.00  
> 1000s.: (45.00...50.00)  
2nd speed 1/min: 2700  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 0.00...7.00  
> 1000s.: -  
3rd speed 1/min: 2500  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 11.0...19.0  
> 1000s.: (10.0...20.0)  
4th speed 1/min: 2400  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 23.0...29.0  
> 1000s.: (21.0...31.0)  
5th speed 1/min: 2100  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 50.00...53.00  
> 1000s.: (49.00...54.00)  
6th speed 1/min: 1500  
Charge press. hPa: 1000

Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 51.5...52.5  
> 1000S.: (50.0...54.0)  
7th speed 1/min: 800  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 53.5...56.5  
> 1000S.: (52.5...57.5)  
8th speed 1/min: 600  
Charge press. hPa: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 40.0...41.0  
> 1000S.: (38.0...43.0)

Electr. shutoff:

1st speed 1/min: 450  
Del. quantity cm3/: 0.00...3.00  
> 1000S.: -  
Shutoff  
electromagnet>volt: -  
KSB/AFB  
valve > Volt: 12.0

Damper set qty.:

LFG-setting:

Idle delivery:

1st speed 1/min: 450  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm3/: 12.00...16.00  
> 1000S.: (10.00...18.00)  
2nd speed 1/min: 500  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 4.0...10.0  
> 1000S.: (2.5...11.5)

Rest delivery:

1st speed 1/min: 800  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 3.50...5.50  
> 1000S.: (2.50...6.50)

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1500  
Charge press. hPa: -  
Inj.-qty. cm3/ : - 9.0..11.0 "

difference> 1000S.: -  
Shutoff  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1500  
Charge press. hPa: -  
Inj.-qty. cm3/: 4.0...6.0 Z'  
difference> 1000S.: -  
Shutoff  
electromagnet Volt: 12.0  
3rd speed 1/min: 1500  
Charge press. hPa: ALFB  
Inj.-qty. cm3/: 4.0...6.0 Z:  
difference> 1000S.: -  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):  
1st speed 1/min: 1500  
Charge press. hPa: -  
TD-travel : - 0.7...1.3 '  
difference> mm: -

Shutoff  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1500  
Charge press. hPa: ALFB  
TD-travel : 0.0...0.6 :  
difference> mm: -  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0

SP press.-dif.measurement:  
pompa di mandata (FP):  
1st speed 1/min: 1500  
Charge press. hPa: -  
Supply pump-  
pressure > : - 0.1...0.3 "  
difference> bar: -  
Shutoff  
electromagnet>Volt: 12.0

Automatic starting fuel delivery:

1st speed 1/min: 220  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 52.00...78.00  
> 1000S.: -

2nd speed 1/min: 400  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 25.00...45.00  
> 1000S.: -

3rd speed 1/min: 100

Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 50.0...80.0  
> 1000S.: -

Shutoff electromagnet:

Cut-in  
>min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.2...3.4
KF	mm: 5.2...5.6
MS	mm: 1.4...1.8
LDA stroke	mm: 6.7
Ya	mm: 37.2...39.2
Yb	mm: 38.2...46.8

Remarks:

⋮

Ya = Distance between VE flange and  
speed-control lever in idle  
position  
Measurement point = edge of control  
lever on drive end

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position  
Measurement point = edge of control  
lever on distributor-head end

Z = Absolute delivery

On initial measurement, screw in  
residual-quantity adjusting screw 2 mm.

Following pump adjustment, screw out  
residual-quantity adjusting screw 2 mm.

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA  
Edition : 01.08.95  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/9F2100R508-2  
Type number : 0 460 494 408  
Customer Part-No. :

Customer-specific information  
Customer : FIAT-AUTO

Engine : M718 NT19.L

Power KW: 66

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil  
return>temp. > °C  
with>thermometer> : 40.00...48.00  
Electronically> : 42.00...50.00

Inlet press., bar : 0.30 .0.40

Calibrating nozzle-holder  
assembly> : 1 688 901 022

Opening  
Pressure> bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall>thickness : 2.00  
x Length> mm: 450

Start of delivery  
Prestroke mm: -  
> (from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000  
Charge press. hPa: 1000  
Setting value mm: 2.70...2.90  
Shutoff  
electromagnet>Volt: 12.0

Supply-pump pressure

Speed 1/min: 1000  
Charge press hPa: 1000  
Setting value bar: 4.50...5.10  
Shutoff  
electromagnet>Volt: 12.0

Full-load del. with charge press.:

Speed 1/min: 1500  
Charge press. hPa: 1000  
Del. quantity cm3/  
> 1000S.: 51.50...52.50  
Shutoff  
electromagnet>Volt: 12.0  
Dispersion cm3/: 2.5  
> 1000S.: (2.5)

Full-load del. w/out charge press.:

Speed 1/min: 600  
Del. quantity cm3/  
> 1000S.: 40.00...41.00  
Shutoff  
electromagnet>Volt: 12.0

Low-idle speed regulation

Speed 1/min: 450  
Del. quantity cm3/  
> 1000S.: 12.0...16.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 2.5  
> 1000S.: (2.5)

Residual-Delivery Setting

Speed 1/min: 800  
Del. quantity cm3/  
> 1000S.: 3.50...5.50  
Shutoff  
electromagnet Volt: 12.0

Full-load speed regulation

Speed 1/min: 2400  
Charge press hPa: 1000  
Del. quantity cm3/  
> 1000S.: 23.00...29.00  
Shutoff  
electromagnet>Volt: 12.0

Start:

Speed 1/min: 100  
Del. quantity cm3/: 50.00...80.00  
mind> 1000S.: 50.00

Shutoff  
electromagnet>Volt: 12.0

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1500  
Charge press hPa: -  
Inj.-qty. cm<sup>3</sup>/  
difference> 1000S.: - 8.0...16.0 \*  
Shutoff  
electromagnet>Volt: 12.0  
TD-travel dif.measurement

1.Speed 1/min: 1500  
Charge press hPa: -  
TD-travel  
difference> mm: - 0.8...0.9 \*  
Shutoff  
electromagnet>Volt: 12.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000  
Charge press hPa: 1000  
TD travel mm: 2.7...2.9  
> mm: (2.2...3.4)  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1500  
Charge press hPa: 1000  
TD travel mm: 4.9...5.5  
> mm: (4.5...5.9)  
Shutoff  
electromagnet>Volt: 12.0  
3rd speed 1/min: 2100  
Charge press hPa: 1000  
TD travel mm: 7.60...8.20  
> mm: (7.20...8.60)  
Shutoff  
electromagnet>Volt: 12.0

Supply-pump pressure characteristic:

1st speed 1/min: 1000  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 4.50...5.10  
> bar: -  
Shutoff  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1500  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 5.90...6.50  
> bar: -  
Shutoff  
electromagnet>Volt: 12.0

3rd speed 1/min: 2100  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 7.50...8.10  
> bar: -

Shutoff  
electromagnet>Volt: 12.0

Overflow quantity at overflow valve:

1st speed 1/min: 800  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 75.00...119.50  
quantity> cm<sup>3</sup>/10s: (50.00...134.50)  
2nd speed 1/min: 2100  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 97.30...180.70  
quantity> cm<sup>3</sup>/10s: (82.30...195.70)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 750  
Charge-air pressure-setting  
point> hPa: 450  
LDA-stroke mm: 6.7  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 47.00...48.00  
> 1000S.: (45.00...50.00)  
2nd speed 1/min: 2700  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 0.00...7.00  
> 1000S.: -  
3rd speed 1/min: 2500  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 11.0...19.0  
> 1000S.: (10.0...20.0)  
4th speed 1/min: 2400  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 23.0...29.0  
> 1000S.: (21.0...31.0)  
5th speed 1/min: 2100  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 50.00...53.00  
> 1000S.: (49.00...54.00)  
6th speed 1/min: 1500  
Charge press. hPa: 1000

Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 51.5...52.5  
> 1000S.: (50.0...54.0)  
7th speed 1/min: 800  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 53.5...56.5  
> 1000S.: (52.5...57.5)  
8th speed 1/min: 600  
Charge press. hPa: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 40.0...41.0  
> 1000S.: (38.0...43.0)

Electr. shutoff:

1st speed 1/min: 450  
Del. quantity cm3/: 0.00...3.00  
> 1000S.: -  
Shutoff  
electromagnet>volt: -  
KSB/AFB  
valve > Volt: 12.0

Damper set qty.:

LFG-setting:

Idle delivery:

1st speed 1/min: 450  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm3/: 12.00...16.00  
> 1000S.: (10.00...18.00)  
2nd speed 1/min: 500  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 4.0...10.0  
> 1000S.: (2.5...11.5)

Rest delivery:

1st speed 1/min: 800  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 3.50...5.50  
> 1000S.: (2.50...6.50)

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1500  
Charge press. hPa: -  
Inj.-qty. cm3/ : - 9.0..11.0 "

difference> 1000S.: -  
Shutoff  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1500  
Charge press. hPa: -  
Inj.-qty. cm3/: 4.0...6.0 Z'  
difference> 1000S.: -  
Shutoff  
electromagnet Volt: 12.0  
3rd speed 1/min: 1500  
Charge press. hPa: ALFB  
Inj.-qty. cm3/: 4.0...6.0 Z:  
difference> 1000S.: -  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):  
1st speed 1/min: 1500  
Charge press. hPa: -  
TD-travel : - 0.7...1.3 '  
difference> mm: -

Shutoff  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1500  
Charge press. hPa: ALFB  
TD-travel : 0.0...0.6 :  
difference> mm: -  
KSB/AFB  
valve > Volt: 12.0  
Shutoff  
electromagnet>Volt: 12.0

SP press.-dif.measurement:  
pompa di mandata (FP):  
1st speed 1/min: 1500  
Charge press. hPa: -  
Supply pump-  
pressure > : - 0.1...0.3 "  
difference> bar: -  
Shutoff  
electromagnet>Volt: 12.0

Part-load del.at 3rd inj.-qty.  
terza fermo della portata  
stop (EGR set)  
scarico) (ARF)  
gaz d'échappement-ARF)  
Spacing mm: 12.0

1st speed 1/min: 1000  
Charge press. hPa: -  
KSB/AFB  
valve > Volt: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm3/: 18.5..20.5\*\*  
> 1000S.: (17.5...21.5)

Automatic starting fuel delivery:

1st speed 1/min: 220  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 52.00...78.00  
> 1000s.: -

2nd speed 1/min: 400  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 25.00...45.00  
> 1000s.: -

3rd speed 1/min: 100  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 50.0...80.0  
> 1000s.: -

Shutoff electromagnet:

Cut-in  
>min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation	
K	mm: 3.2...3.4
KF	mm: 5.2...5.6
MS	mm: 1.4...1.8
MS1	mm: ** 1,85 V
LDA stroke	mm: 6.7
Ya	mm: 37.2...39.2
Yb	mm: 38.2...46.8

Remarks:

⋮

Ya = Distance between VE flange and speed-control lever in idle position  
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position  
Measurement point = edge of control lever on distributor-head end

Z = Absolute delivery

On initial measurement, screw in

residual-quantity adjusting screw 2 mm.

Following pump adjustment, screw out residual-quantity adjusting screw 2 mm.



# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU  
Edition : 04.08.95  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/9F2250R445-5  
Type number : 0 460 494 409  
Customer Part-No. :

Customer-specific information  
Customer : PSA

Engine : XUD 9 TF-L

Power KW: 67

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return>temp. > °C  
with>thermometer> : 40.00...48.00  
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly> : 1 688 901 022

Opening  
Pressure> bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall>thickness : 2.00  
x Length> mm: 450

Start of delivery  
Prestroke mm: -  
> (from BDC): -

Indicator setting  
Piston stroke> mm: 0,3  
Outlet> : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500

Charge press. hPa: 1000  
Setting value mm: 3.90...4.30  
Shutoff  
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1500  
Charge press hPa: 1000  
Setting value bar: 5.40...6.00  
Shutoff  
electromagnet>Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 54.00...55.00  
Shutoff  
electromagnet>Volt: 12  
Dispersion cm<sup>3</sup>/: 2.0  
> 1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 36.5...37.5  
Shutoff  
electromagnet>Volt: 12.0

Low-idle speed regulation

Speed 1/min: 440  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 15.0...17.0  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 2.0  
> 1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 490  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 8.00...9.00  
Shutoff  
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2575  
Charge press hPa: 1000  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 12.0...16.0  
Shutoff  
electromagnet>Volt: 12

Start:

Speed 1/min: 150  
Del. quantity cm<sup>3</sup>/: 37.00...67.00  
mind> 1000S.: 37.00  
Shutoff  
electromagnet>Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 900  
Charge press hPa: 1000  
TD travel mm: 0.80...1.60  
> mm: (0.50...1.90)  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1500  
Charge press hPa: 1000  
TD travel mm: 3.90...4.30  
> mm: (3.40...4.80)  
Shutoff  
electromagnet>Volt: 12.0  
3rd speed 1/min: 2000  
Charge press hPa: 1000  
TD travel mm: 6.10...6.90  
> mm: (5.80...7.20)  
Shutoff  
electromagnet>Volt: 12.0

Supply-pump pressure characteristic:

1st speed 1/min: 900  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 3.90...4.50  
> bar: -  
Shutoff  
electromagnet>Volt: 12  
2nd speed 1/min: 1500  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 5.40...6.00  
> bar: -  
Shutoff  
electromagnet>Volt: 12  
3rd speed 1/min: 2000  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 6.50...7.10  
> bar: -  
Shutoff  
electromagnet>Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0

Overflow : 41.60...83.30  
quantity> cm<sup>3</sup>/10s: (26.60...98.3)  
2nd speed 1/min: 2150  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 55.50...138.80  
quantity> cm<sup>3</sup>/10s: (40.50...153.80)

Delivery-quant. and breakaway char.:

1st speed 1/min: 750  
Charge-air pressure-setting  
point> hPa: 350  
LDA-stroke mm: 5.9  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 45.5...46.5  
> 1000S.: (43.0...49.0)  
2nd speed 1/min: 2750  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 0.00...6.00  
> 1000S.: (0.00...6.00)  
3rd speed 1/min: 2575  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 12.0...16.0  
> 1000S.: (10.0...18.00)  
4th speed 1/min: 2375  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 34.0...44.0  
> 1000S.: (33.0...45.0)  
5th speed 1/min: 2150  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 49.10...51.10  
> 1000S.: (47.90...52.30)  
6th speed 1/min: 2000  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 51.0...53.0  
> 1000S.: (49.8...54.2)  
7th speed 1/min: 1250  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 54.0...55.0  
> 1000S.: (52.3...56.7)  
8th speed 1/min: 500  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0

Del. quantity cm<sup>3</sup>/: 46.80...49.80  
> 1000S.: (45.30...51.30)  
9th speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 36.50...37.50  
> 1000S.: (34.00...40.00)

Mech. shutoff:

1st speed 1/min: 2000  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
> 1000S.: (0.00...3.00)  
Shutoff  
electromagnet>volt: 12.0

Electr. shutoff:

1st speed 1/min: 400  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
> 1000S.: (0.00...3.00)  
Shutoff  
electromagnet>volt: -

Damper set qty.:

LFG-setting:

Idle delivery:

1st speed 1/min: 440  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 15.0...17.0  
> 1000S.: (12.0...20.0)

High Idle:

1st speed 1/mi: 490  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 15.0...17.0  
> 1000S.: (12.0...20.0)

Rest delivery:

1st speed 1/min: 490  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 8.0...9.0  
> 1000S.: (6.5...10.5)

Automatic starting fuel delivery:

1st speed 1/min: 200  
Shutoff  
electromagnet>Volt: 12.0

Del. quantity cm<sup>3</sup>/: 45.50...60.50  
> 1000S.: -

2nd speed 1/min: 380  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 25.00...45.00  
> 1000S.: (25.00...45.00)

4th speed 1/min: 150  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 37.00...67.00  
> 1000S.: (37.00...67.00)

Shutoff electromagnet:

Cut-in  
>min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.2...3.4
KF	mm: KOT
MS	mm: 1.1...1.5
Ya	mm: 25.8...29.8
Yb	mm: 68.0...82.0

Remarks:

:  
:  
:  
Ya = Distance between VE flange and  
speed-control lever in idle  
position  
Measurement point = edge of control  
lever on drive end

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position  
Measurement point = edge of control  
lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU
Edition : 04.08.95
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/9F2250R445-6
Type number : O 460 494 410
Customer Part-No. :

Customer-specific information
Customer : PSA

Engine : XUD 9 TF-L

Power KW: 67

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 022

Opening
Pressure> bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 450

Start of delivery
Prestroke mm: -
> (from BDC): -

Indicator setting
Piston stroke> mm: 0,3
Outlet> : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500

D25

Charge press. hPa: 1000
Setting value mm: 3.90...4.30
Shutoff
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Charge press hPa: 1000
Setting value bar: 5.40...6.00
Shutoff
electromagnet>Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250
Charge press. hPa: 1000
Del. quantity cm3/
> 1000S.: 54.00...55.00
Shutoff
electromagnet>Volt: 12
Dispersion cm3/: 2.0
> 1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
> 1000S.: 36.5...37.5
Shutoff
electromagnet>Volt: 12.0

Low-idle speed regulation

Speed 1/min: 440
Del. quantity cm3/
> 1000S.: 15.0...17.0
Shutoff
electromagnet>Volt: 12.0
Del. quantity cm3/: 2.0
> 1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 490
Del. quantity cm3/
> 1000S.: 8.00...9.00
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2575
Charge press hPa: 1000
Del. quantity cm3/
> 1000S.: 12.0...16.0
Shutoff
electromagnet>Volt: 12

Start:

Speed 1/min: 150  
Del. quantity cm<sup>3</sup>/: 37.00...67.00  
mind> 1000s.: 37.00  
Shutoff  
electromagnet>Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 900  
Charge press hPa: 1000  
TD travel mm: 0.80...1.60  
> mm: (0.50...1.90)  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1500  
Charge press hPa: 1000  
TD travel mm: 3.90...4.30  
> mm: (3.40...4.80)  
Shutoff  
electromagnet>Volt: 12.0  
3rd speed 1/min: 2000  
Charge press hPa: 1000  
TD travel mm: 6.10...6.90  
> mm: (5.80...7.20)  
Shutoff  
electromagnet>Volt: 12.0

Supply-pump pressure characteristic:

1st speed 1/min: 900  
Charge press. hPa: 1000  
Supply-pump pressure> bar: 3.90...4.50  
> bar: -  
Shutoff  
electromagnet>Volt: 12  
2nd speed 1/min: 1500  
Charge press. hPa: 1000  
Supply-pump pressure> bar: 5.40...6.00  
> bar: -  
Shutoff  
electromagnet>Volt: 12  
3rd speed 1/min: 2000  
Charge press. hPa: 1000  
Supply-pump pressure> bar: 6.50...7.10  
> bar: -  
Shutoff  
electromagnet>Volt: 12

Overlow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0

Overflow : 41.60...83.30  
quantity> cm<sup>3</sup>/10s: (26.60...98.3)  
2nd speed 1/min: 2150  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 55.50...138.80  
quantity> cm<sup>3</sup>/10s: (40.50...153.80)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 750  
Charge-air pressure-setting point> hPa: 350  
LDA-stroke mm: 5.9  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 45.5...46.5  
> 1000s.: (43.0...49.0)  
2nd speed 1/min: 2250  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 0.00...6.00  
> 1000s.: (0.00...6.00)  
3rd speed 1/min: 2575  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 12.0...16.0  
> 1000s.: (10.0...18.00)  
4th speed 1/min: 2375  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 34.0...44.0  
> 1000s.: (33.0...45.0)  
5th speed 1/min: 2150  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 49.10...51.10  
> 1000s.: (47.90...52.30)  
6th speed 1/min: 2000  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 51.0...53.0  
> 1000s.: (49.8...54.2)  
7th speed 1/min: 1250  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 54.0...55.0  
> 1000s.: (52.3...56.7)  
8th speed 1/min: 500  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0

Del. quantity cm<sup>3</sup>/: 46.80...49.80  
> 1000S.: (45.30...51.30)  
9th speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 36.50...37.50  
> 1000S.: (34.00...40.00)

Mech. shutoff:

1st speed 1/min: 2000  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
> 1000S.: (0.00...3.00)  
Shutoff  
electromagnet>volt: 12.0

Electr. shutoff:

1st speed 1/min: 400  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
> 1000S.: (0.00...3.00)  
Shutoff  
electromagnet>volt: -

Damper set qty.:

LFG-setting:

Idle delivery:

1st speed 1/min: 440  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 15.0...17.0  
> 1000S.: (12.0...20.0)

High Idle:

1st speed 1/mi: 490  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 15.0...17.0  
> 1000S.: (12.0...20.0)

Rest delivery:

1st speed 1/min: 490  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 8.0...9.0  
> 1000S.: (6.5...10.5)

Automatic starting fuel delivery:

1st speed 1/min: 200  
Shutoff  
electromagnet>Volt: 12.0

Del. quantity cm<sup>3</sup>/: 45.50...60.50  
> 1000S.: -

2nd speed 1/min: 380  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 25.00...45.00  
> 1000S.: (25.00...45.00)

4th speed 1/min: 150  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 37.00...67.00  
> 1000S.: (37.00...67.00)

Shutoff electromagnet:

Cut-in  
>min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.2...3.4
KF	mm: KOT
MS	mm: 1.1...1.5
Ya	mm: 25.8...29.8
Yb	mm: 68.0...82.0

Remarks:

:  
:  
Ya = Distance between VE flange and  
speed-control lever in idle  
position  
Measurement point = edge of control  
lever on drive end

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position  
Measurement point = edge of control  
lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU
Edition : 04.08.95
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/9F2250R445-7
Type number : 0 460 494 411
Customer Part-No. :

Customer-specific information
Customer : PSA

Engine : XUD 9 TF-L

Power KW: 67

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42.00...50.00

Inlet press., bar : 0.30..0.40

Calibrating nozzle-holder
assembly> : 1 688 901 022

Opening
Pressure> bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 450

Start of delivery
Prestroke mm: -
> (from BDC): -

Indicator setting
Piston stroke> mm: 0,3
Outlet> : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500

Charge press. hPa: 1000
Setting value mm: 3.90...4.30
Shutoff
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Charge press hPa: 1000
Setting value bar: 5.40...6.00
Shutoff
electromagnet>Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250
Charge press. hPa: 1000
Del. quantity cm3/
> 1000S.: 54.00...55.00
Shutoff
electromagnet>Volt: 12
Dispersion cm3/: 2.0
> 1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
> 1000S.: 36.5...37.5
Shutoff
electromagnet>Volt: 12.0

Low-idle speed regulation

Speed 1/min: 440
Del. quantity cm3/
> 1000S.: 15.0...17.0
Shutoff
electromagnet>Volt: 12.0
Del. quantity cm3/: 2.0
> 1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 490
Del. quantity cm3/
> 1000S.: 8.00...9.00
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2575
Charge press hPa: 1000
Del. quantity cm3/
> 1000S.: 12.0...16.0
Shutoff
electromagnet>Volt: 12

Start:

Speed 1/min: 150  
Del. quantity cm<sup>3</sup>/: 37.00...67.00  
mind> 1000S.: 37.00  
Shutoff  
electromagnet>Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 900  
Charge press hPa: 1000  
TD travel mm: 0.80...1.60  
> mm: (0.50...1.90)  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1500  
Charge press hPa: 1000  
TD travel mm: 3.90...4.30  
> mm: (3.40...4.80)  
Shutoff  
electromagnet>Volt: 12.0  
3rd speed 1/min: 2000  
Charge press hPa: 1000  
TD travel mm: 6.10...6.90  
> mm: (5.80...7.20)  
Shutoff  
electromagnet>Volt: 12.0

Supply-pump pressure characteristic:

1st speed 1/min: 900  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 3.90...4.50  
> bar: -  
Shutoff  
electromagnet>Volt: 12  
2nd speed 1/min: 1500  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 5.40...6.00  
> bar: -  
Shutoff  
electromagnet>Volt: 12  
3rd speed 1/min: 2000  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 6.50...7.10  
> bar: -  
Shutoff  
electromagnet>Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0

Overflow : 41.60...83.30  
quantity> cm<sup>3</sup>/10s: (26.60...98.3)  
2nd speed 1/min: 2150  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 55.50...138.80  
quantity> cm<sup>3</sup>/10s: (40.50...153.80)

Delivery-quant. and breakaway char.:

1st speed 1/min: 750  
Charge-air pressure-setting  
point> hPa: 350  
LDA-stroke mm: 5.9  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 45.5...46.5  
> 1000S.: (43.0...49.0)  
2nd speed 1/min: 2750  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 0.00...6.00  
> 1000S.: (0.00...6.00)  
3rd speed 1/min: 2575  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 12.0...16.0  
> 1000S.: (10.0...18.00)  
4th speed 1/min: 2375  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 34.0...44.0  
> 1000S.: (33.0...45.0)  
5th speed 1/min: 2150  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 49.10...51.10  
> 1000S.: (47.90...52.30)  
6th speed 1/min: 2000  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 51.0...53.0  
> 1000S.: (49.8...54.2)  
7th speed 1/min: 1250  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 54.0...55.0  
> 1000S.: (52.3...56.7)  
8th speed 1/min: 500  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0



Del. quantity cm<sup>3</sup>/: 46.80...49.80  
> 1000S.: (45.30...51.30)  
9th speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 36.50...37.50  
> 1000S.: (34.00...40.00)

Mech. shutoff:

1st speed 1/min: 2000  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
> 1000S.: (0.00...3.00)  
Shutoff  
electromagnet>volt: 12.0

Electr. shutoff:

1st speed 1/min: 400  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
> 1000S.: (0.00...3.00)  
Shutoff  
electromagnet>volt: -

Damper set qty.:

LFG-setting:

Idle delivery:

1st speed 1/min: 440  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 15.0...17.0  
> 1000S.: (12.0...20.0)

High Idle:

1st speed 1/mi: 490  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 15.0...17.0  
> 1000S.: (12.0...20.0)

Rest delivery:

1st speed 1/min: 490  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 8.0...9.0  
> 1000S.: (6.5...10.5)

Automatic starting fuel delivery:

1st speed 1/min: 200  
Shutoff  
electromagnet>Volt: 12.0

Del. quantity cm<sup>3</sup>/: 45.50...60.50  
> 1000S.: -

2nd speed 1/min: 380  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 25.00...45.00  
> 1000S.: (25.00...45.00)

4th speed 1/min: 150  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 37.00...67.00  
> 1000S.: (37.00...67.00)

Shutoff electromagnet:

Cut-in  
>min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: 3.2...3.4  
KF mm: KOT  
MS mm: 1.1...1.5  
Ya mm: 25.8...29.8  
Yb mm: 68.0...82.0

Remarks:

:  
:  
Ya = Distance between VE flange and  
speed-control lever in idle  
position  
Measurement point = edge of control  
lever on drive end

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position  
Measurement point = edge of control  
lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW
Edition : 04.08.95
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/9F2200R603-1
Type number : 0 460 494 413
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 1.9 L UD MVEG2

Power KW: 55

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 111

Opening
Pressure> bar: 147.00...150.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 450

Start of delivery
Prestroke mm: -
> (from BDC): -

Indicator setting
Piston stroke> mm: 0,8
Outlet> : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250

E03

Charge press. hPa: 750
Setting value mm: 5.30...5.70
Shutoff
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Charge press hPa: 750
Setting value bar: 5.50...6.10
Shutoff
electromagnet>Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250
Charge press. hPa: 750
Del. quantity cm3/
> 1000s.: 46.00...47.00
Shutoff
electromagnet>Volt: 12
Dispersion cm3/: 2.0
> 1000s.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm3/
> 1000s.: 38.5...42.9
Shutoff
electromagnet>Volt: 12.0

Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm3/
> 1000s.: 20.0...24.0
Shutoff
electromagnet>Volt: 12.0
Del. quantity cm3/: 2.0
> 1000s.: (3.0)

Residual-Delivery Setting

Speed 1/min: 550
Del. quantity cm3/
> 1000s.: 6.50...9.50
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2525
Charge press hPa: 750
Del. quantity cm3/
> 1000s.: 16.0...24.0
Shutoff
electromagnet>Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 35.50...50.50  
mind> 1000S.: 35.50  
Shutoff  
electromagnet>Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750  
Charge press hPa: 750  
TD travel mm: 3.00...3.80  
> mm: (2.60...4.20)  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1250  
Charge press hPa: 750  
TD travel mm: 5.30...5.70  
> mm: (4.70...6.30)  
Shutoff  
electromagnet>Volt: 12.0  
3rd speed 1/min: 2000  
Charge press hPa: 750  
TD travel mm: 8.20...9.00  
> mm: (7.80...9.40)  
Shutoff  
electromagnet>Volt: 12.0

Supply-pump pressure characteristic:

1st speed 1/min: 750  
Charge press. hPa: 750  
Supply-pump  
pressure> bar: 4.00...4.60  
> bar: -  
Shutoff  
electromagnet>Volt: 12  
2nd speed 1/min: 1250  
Charge press. hPa: 750  
Supply-pump  
pressure> bar: 5.50...6.10  
> bar: -  
Shutoff  
electromagnet>Volt: 12  
3rd speed 1/min: 2000  
Charge press. hPa: 750  
Supply-pump  
pressure> bar: 7.70...8.30  
> bar: -  
Shutoff  
electromagnet>Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 1250  
Charge press. hPa: 750  
Shutoff  
electromagnet>Volt: 12.0

Overflow : 43.00...112.5  
quantity> cm<sup>3</sup>/10s: (28.00...127.5)  
2nd speed 1/min: 2100  
Charge press. hPa: 750  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 41.50...152.70  
quantity> cm<sup>3</sup>/10s: (26.50...167.70)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2750  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
> 1000S.: -  
3rd speed 1/min: 2525  
Charge press. hPa: 750  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 18.0...22.0  
> 1000S.: (16.0...24.00)  
4th speed 1/min: 2400  
Charge press. hPa: 750  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 29.5...39.5  
> 1000S.: (38.5...40.5)  
5th speed 1/min: 2100  
Charge press. hPa: 750  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 45.20...47.20  
> 1000S.: (44.00...48.40)  
6th speed 1/min: 1250  
Charge press. hPa: 750  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 46.0...47.0  
> 1000S.: (44.3...48.7)  
7th speed 1/min: 700  
Charge press. hPa: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 38.5...42.9  
> 1000S.: -

Mech. shutoff:

1st speed 1/min: 2000  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
> 1000S.: (0.00...3.00)  
Shutoff  
electromagnet>volt: 12.0

Electr. shutoff:

1st speed 1/min: 450  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
> 1000s.: (0.00...3.00)  
Shutoff  
electromagnet>volt: -

Damper set qty.:

LFG-setting:

Idle delivery:

1st speed 1/min: 450  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 20.0...24.0  
> 1000s.: (18.0...26.0)

High Idle:

1st speed 1/mi: 550  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 14.0...22.0  
> 1000s.: -

Rest delivery:

1st speed 1/min: 550  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 6.5...9.5  
> 1000s.: (6.0...10.0)

Automatic starting fuel delivery:

1st speed 1/min: 180  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 35.00...55.00  
> 1000s.: -

2nd speed 1/min: 380  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 31.00...51.00  
> 1000s.: (31.00...51.00)

4th speed 1/min: 100  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 35.50...50.50  
> 1000s.: -

Shutoff electromagnet:

Cut-in  
>min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.6...3.8
KF	mm: KOT
MS	mm: 1.0...1.4
Ya	mm: 36.0...40.0
Yb	mm: 48.6...58.4

Remarks:

:  
:  
Ya = Distance between VE flange and  
speed-control lever in idle  
position  
Measurement point = edge of control  
lever on drive end

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position  
Measurement point = edge of control  
lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW
Edition : 31.07.95
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/9F2300R597-5
Type number : 0 460 494 414
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 1.9L UD A3/B4

Power KW: 55

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 000

Opening
Pressure> bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 840

Start of delivery
Prestroke mm: -
> (from BDC): -

Indicator setting
Piston stroke> mm: 0.8
Outlet> : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250

E06

Charge press. hPa: 750
Setting value mm: 4.30...4.50
Shutoff
electromagnet>Volt: 12.0

Supply-pump pressure

Speed 1/min: 1250
Charge press hPa: 750
Setting value bar: 5.40...6.00
Shutoff
electromagnet>Volt: 12.0

Full-load del. with charge press.:

Speed 1/min: 1250
Charge press. hPa: 750
Del. quantity cm3/
> 1000s.: 50.00...51.00
Shutoff
electromagnet>Volt: 12.0
Dispersion cm3/: 2.5
> 1000s.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 450
Del. quantity cm3/
> 1000s.: 37.2...43.2
Shutoff
electromagnet>Volt: 12.0

Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm3/
> 1000s.: 16.0...18.0
Shutoff
electromagnet>Volt: 12.0
Del. quantity cm3/: 2.0
> 1000s.: (3.0)

Residual-Delivery Setting

Speed 1/min: 550
Del. quantity cm3/
> 1000s.: 7.00...8.00
Shutoff
electromagnet Volt: 12.0

Full-load speed regulation

Speed 1/min: 2600
Charge press hPa: 750
Del. quantity cm3/
> 1000s.: 9.0...13.0
Shutoff
electromagnet>Volt: 12.0

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 32.50...47.50  
mind> 1000S.: 32.50  
Shutoff  
electromagnet>Volt: 12.0

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1250  
Charge press hPa: 750  
Inj.-qty. cm<sup>3</sup>/  
difference> 1000S.: - 7.0...11.0 \*  
Shutoff  
electromagnet>Volt: 12.0  
TD-travel dif.measurement

1.Speed 1/min: 1250  
Charge press hPa: 750  
TD-travel  
difference> mm: - 1.9...2.1 \*  
Shutoff  
electromagnet>Volt: 12.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750  
Charge press hPa: 750  
TD travel mm: 1.50...2.10  
> mm: (1.00...2.60)  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1250  
Charge press hPa: 750  
TD travel mm: 4.30...4.50  
> mm: (3.60...5.20)  
Shutoff  
electromagnet>Volt: 12.0  
3rd speed 1/min: 2150  
Charge press hPa: 750  
TD travel mm: 8.00...8.60  
> mm: (7.50...9.10)  
Shutoff  
electromagnet>Volt: 12.0

Supply-pump pressure characteristic:

1st speed 1/min: 750  
Charge press. hPa: 750  
Supply-pump  
pressure> bar: 4.30...4.90  
> bar: -  
Shutoff  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1250  
Charge press. hPa: 750  
Supply-pump

pressure> bar: 5.40...6.00  
> bar: -

Shutoff  
electromagnet>Volt: 12.0  
3rd speed 1/min: 2200  
Charge press. hPa: 750  
Supply-pump  
pressure> bar: 7.40...8.00  
> bar: -

Shutoff  
electromagnet>Volt: 12.0

Overflow quantity at overflow valve:

1st speed 1/min: 1250  
Charge press. hPa: 750  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 43.00...112.5  
quantity> cm<sup>3</sup>/10s: (28.00...127.5)  
2nd speed 1/min: 2100  
Charge press. hPa: 750  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 55.60...139.00  
quantity> cm<sup>3</sup>/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2750  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
> 1000S.: (0.00...3.00)  
3rd speed 1/min: 2600  
Charge press. hPa: 750  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 9.0...13.0  
> 1000S.: (7.0...15.0)  
4th speed 1/min: 2400  
Charge press. hPa: 750  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 32.5...42.5  
> 1000S.: (31.5...43.5)  
5th speed 1/min: 2100  
Charge press. hPa: 750  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 42.0...44.0  
> 1000S.: (40.8...45.2)  
6th speed 1/min: 1250  
Charge press. hPa: 750  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 50.0...51.0  
> 1000S.: (48.3...52.7)

7th speed 1/min: 450  
Charge press. hPa: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 37.2...43.2  
> 1000S.: (34.7...45.7)

Electr. shutoff:

1st speed 1/min: 450  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
> 1000S.: (0.00...3.00)  
Shutoff  
electromagnet>volt: -

Damper set qty.:

LFG-setting:

Idle delivery:

1st speed 1/min: 450  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 16.0...18.0  
> 1000S.: (13.0...21.0)

High Idle:

1st speed 1/mi: 500  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 16.0...18.0  
> 1000S.: (13.0...21.0)

Rest delivery:

1st speed 1/min: 550  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 7.0...8.0  
> 1000S.: (5.5...9.5)

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1250  
Charge press. hPa: 750  
Inj.-qty. cm<sup>3</sup>/ : - 4.5...6.5 "  
difference> 1000S.: -  
Shutoff  
electromagnet>Volt: 12.0

SP press.-dif.measurement:

pompa di mandata (FP):  
1st speed 1/min: 1250  
Charge press. hPa: 750  
Supply pump-

pressure > : - 0.1...0.3 "  
difference> bar: -  
Shutoff  
electromagnet>Volt: 12.0

Part-load del.at 3rd inj.-qty.  
terza fermo della portata  
stop (EGR set)  
scarico) (ARF)  
gaz d'échappement-ARF)  
Spacing mm: ?

1st speed 1/min: 1000  
Charge press. hPa: 750  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 34.00...36.00  
> 1000S.: (32.00...38.00)

Automatic starting fuel delivery:

1st speed 1/min: 180  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 35.00...55.00  
> 1000S.: (35.00...55.00)

2nd speed 1/min: 380  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 31.00...51.00  
> 1000S.: (31.00...51.00)

4th speed 1/min: 100  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 37.00...43.00  
> 1000S.: (32.50...47.50)

Shutoff electromagnet:

Cut-in  
>min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: 3.6...3.8  
KF mm: KOT  
MS mm: 1.0...1.4  
Ya mm: 37.9...41.6  
Yb mm: 49.9...63.3

Remarks:  
: SPALTMAß A = 0.8-3.0  
:

Pump in stepped LDA

Ya = Distance between VE flange and

speed-control lever in idle  
position  
Measurement point = edge of control  
lever on drive end

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position  
Measurement point = edge of control  
lever on distributor-head end





BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW
Edition : 04.08.95
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/9F2200R604-1
Type number : 0 460 494 416
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 1.9 L UD MVEG2
Power KW: 55

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42.00...50.00

Inlet press., bar : 0.30. .0.40

Calibrating nozzle-holder
assembly> : 1 688 901 111

Opening
Pressure> bar: 147.00...150.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 450

Start of delivery
Prestroke mm: -
> (from BDC): -

Indicator setting
Piston stroke> mm: 0,8
Outlet> : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250

Charge press. hPa: 750
Setting value mm: 5.30...5.70
Shutoff
electromagnet>Volt: 12

Supply-pump pressure
Speed 1/min: 1250
Charge press hPa: 750
Setting value bar: 5.50...6.10
Shutoff
electromagnet>Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250
Charge press. hPa: 750
Del. quantity cm3/
> 1000S.: 46.00...47.00
Shutoff
electromagnet>Volt: 12
Dispersion cm3/: 2.0
> 1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm3/
> 1000S.: 38.5...42.9
Shutoff
electromagnet>Volt: 12.0

Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm3/
> 1000S.: 20.0...24.0
Shutoff
electromagnet>Volt: 12.0
Del. quantity cm3/: 2.0
> 1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 550
Del. quantity cm3/
> 1000S.: 6.50...9.50
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2525
Charge press hPa: 750
Del. quantity cm3/
> 1000S.: 16.0...24.0
Shutoff
electromagnet>Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 35.50...50.50  
mind> 1000S.: 35.50  
Shutoff  
electromagnet>Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750  
Charge press hPa: 750  
TD travel mm: 3.00...3.80  
> mm: (2.60...4.20)  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1250  
Charge press hPa: 750  
TD travel mm: 5.30...5.70  
> mm: (4.70...6.30)  
Shutoff  
electromagnet>Volt: 12.0  
3rd speed 1/min: 2000  
Charge press hPa: 750  
TD travel mm: 8.20...9.00  
> mm: (7.80...9.40)  
Shutoff  
electromagnet>Volt: 12.0

Supply-pump pressure characteristic:

1st speed 1/min: 750  
Charge press. hPa: 750  
Supply-pump  
pressure> bar: 4.00...4.60  
> bar: -  
Shutoff  
electromagnet>Volt: 12  
2nd speed 1/min: 1250  
Charge press. hPa: 750  
Supply-pump  
pressure> bar: 5.50...6.10  
> bar: -  
Shutoff  
electromagnet>Volt: 12  
3rd speed 1/min: 2000  
Charge press. hPa: 750  
Supply-pump  
pressure> bar: 7.70...8.30  
> bar: -  
Shutoff  
electromagnet>Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 1250  
Charge press. hPa: 750  
Shutoff  
electromagnet>Volt: 12.0

Overflow : 43.00...112.5  
quantity> cm<sup>3</sup>/10s: (28.00...127.5)  
2nd speed 1/min: 2100  
Charge press. hPa: 750  
Shutoff  
electromagnet>Volt: 12.0  
Overflow : 41.50...152.70  
quantity> cm<sup>3</sup>/10s: (26.50...167.70)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2750  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
> 1000S.: -  
3rd speed 1/min: 2525  
Charge press. hPa: 750  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 18.0...22.0  
> 1000S.: (16.0...24.00)  
4th speed 1/min: 2400  
Charge press. hPa: 750  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 29.5...39.5  
> 1000S.: (38.5...40.5)  
5th speed 1/min: 2100  
Charge press. hPa: 750  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 45.20...47.20  
> 1000S.: (44.00...48.40)  
6th speed 1/min: 1250  
Charge press. hPa: 750  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 46.0...47.0  
> 1000S.: (44.3...48.7)  
7th speed 1/min: 700  
Charge press. hPa: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 38.5...42.9  
> 1000S.: -

Mech. shutoff:

1st speed 1/min: 2000  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
> 1000S.: (0.00...3.00)  
Shutoff  
electromagnet>volt: 12.0

Electr. shutoff:

1st speed 1/min: 450  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
> 1000S.: (0.00...3.00)  
Shutoff  
electromagnet>volt: -

Damper set qty.:

LFG-setting:

Idle delivery:

1st speed 1/min: 450  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 20.0...24.0  
> 1000S.: (18.0...26.0)

High Idle:

1st speed 1/mi: 550  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 14.0...22.0  
> 1000S.: -

Rest delivery:

1st speed 1/min: 550  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 6.5...9.5  
> 1000S.: (6.0...10.0)

Automatic starting fuel delivery:

1st speed 1/min: 180  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 35.00...55.00  
> 1000S.: -

2nd speed 1/min: 380  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 31.00...51.00  
> 1000S.: (31.00...51.00)

4th speed 1/min: 100  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 35.50...50.50  
> 1000S.: -

Shutoff electromagnet:

Cut-in  
>min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.6...3.8
KF	mm: KOT
MS	mm: 1.0...1.4
Ya	mm: 36.0...40.0
Yb	mm: 48.6...58.4

Remarks:

:  
:  
Ya = Distance between VE flange and  
speed-control lever in idle  
position  
Measurement point = edge of control  
lever on drive end

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position  
Measurement point = edge of control  
lever on distributor-head end

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW  
Edition : 04.08.95  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/9F2100R471-3  
Type number : 0 460 494 417  
Customer Part-No. :

Customer-specific information  
Customer : VW 1.9 L

Engine : UD T4

Power KW: 50.0

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return>temp. > °C  
with>thermometer> : 40.00...48.00  
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly> : 1 688 901 111

Opening  
Pressure> bar: 147.00...150.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall>thickness : 2.00  
x Length> mm: 450

Start of delivery  
Prestroke mm: -  
> (from BDC): -

Injection-pump setting values  
Test specifications in parentheses

## Timing-device travel

Speed 1/min: 1250  
Setting value mm: 3.70...4.10  
Shutoff  
electromagnet>Volt: 12

## Supply-pump pressure

Speed 1/min: 1250  
Setting value bar: 5.30...5.90  
Shutoff  
electromagnet>Volt: 12

## Full-load del. w/out charge press.:

Speed 1/min: 1250  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 39.50...40.50  
Shutoff  
electromagnet>Volt: 12  
Dispersion cm<sup>3</sup>/: 2.5  
> 1000S.: (3.5)

## Residual-Delivery Setting

Speed 1/min: 550  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 5.0...6.0  
Shutoff  
electromagnet Volt: 12.0  
Dispersion cm<sup>3</sup>/: 2.0  
> 1000S.: (3.0)

## Full-load speed regulation

Speed 1/min: 2400  
Del. quantity cm<sup>3</sup>/  
> 1000S.: 13.00...17.00  
Shutoff  
electromagnet>Volt: 12

## Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 40.00...90.00  
mind> 1000S.: 40.00  
Shutoff  
electromagnet>Volt: 12

## Load-dependent start of delivery: Inj.-qty.dif.measurement:

Speed 1/min: 1250  
Inj.-qty. cm<sup>3</sup>/  
difference> 1000S.: - 7.0...13.0 \*  
Shutoff  
electromagnet>Volt: 12.0  
TD-travel dif.measurement

1.Speed 1/min: 1250  
TD-travel  
difference> mm: - 0.9...1.1 \*  
Shutoff  
electromagnet>Volt: 12.0

## Inspection-pump test specifications

Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1250  
TD travel mm: 3.7...4.1  
> mm: (3.1...4.7)  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1700  
TD travel mm: 5.60...6.40  
> mm: (5.20...6.80)  
Shutoff  
electromagnet>Volt: 12  
3rd speed 1/min: 750  
TD travel mm: 1.10...1.90  
> mm: (0.70...2.30)  
Shutoff  
electromagnet>Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 1250  
Supply-pump pressure> bar: 5.30...5.90  
> bar: -  
Shutoff  
electromagnet>Volt: 12  
2nd speed 1/min: 1700  
Supply-pump pressure> bar: 6.60...7.20  
> bar: -  
Shutoff  
electromagnet>Volt: 12  
3rd speed 1/min: 750  
Supply-pump pressure> bar: 3.80...4.40  
> bar: -  
Shutoff  
electromagnet>Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 750  
Shutoff  
electromagnet>Volt: 12  
Overflow quantity> cm<sup>3</sup>/10s: 41.70...86.10  
(26.70...101.10)  
2nd speed 1/min: 1850  
Shutoff  
electromagnet>Volt: 12  
Overflow quantity> cm<sup>3</sup>/10s: 55.60...139.00  
(40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1650  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.0...3.0

> 1000s.: -  
2nd speed 1/min: 2400  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 13.0...17.0  
> 1000s.: (11.0...19.0)  
3rd speed 1/min: 2250  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 24.0...34.0  
> 1000s.: (23.0...35.0)  
4th speed 1/min: 1850  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 40.0...42.0  
> 1000s.: (38.8...43.2)  
5th speed 1/min: 1250  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 39.50...40.50  
> 1000s.: (37.80...42.20)  
6th speed 1/min: 750  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 37.0...40.0  
> 1000s.: (35.5...41.5)  
7th speed 1/min: 450  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 36.0...42.0  
> 1000s.: (33.5...44.5)

Electr. shutoff:

1st speed 1/min: 425  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
> 1000s.: (0.00...3.00)  
Shutoff  
electromagnet>volt: -

Damper set qty.:

LFG-setting:

Idle delivery:

1st speed 1/min: 425  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 5.5...7.5  
> 1000s.: (2.5...10.5)

High Idle:

1st speed 1/mi: 500  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 5.5...7.5

> 1000S.: (2.5...10.5)

Rest delivery:

1st speed 1/min: 550  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 5.0...6.0  
> 1000S.: (3.5...7.5)  
2nd speed 1/min: 515  
Shutoff  
electromagnet Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 5.5...7.5  
> 1000S.: (4.0...9.0)

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1250  
Inj.-qty. cm<sup>3</sup>/ : 0.0...3.0 z "  
difference> 1000S.: -  
Shutoff  
electromagnet>Volt: 12.0

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):  
1st speed 1/min: 1250  
TD-travel : - 1.3...1.7 "  
difference> mm: - (0.9...2.1)  
Shutoff  
electromagnet>Volt: 12.0

SP press.-dif.measurement:  
pompa di mandata (FP):  
1st speed 1/min: 1250  
Supply pump-  
pressure > : - 0.7...1.1 "  
difference> bar: - (0.5...1.3)  
Shutoff  
electromagnet>Volt: 12.0

Part-load del.at 3rd inj.-qty.  
terza fermo della portata  
stop (EGR set)  
scarico) (ARF)  
gaz d'échappement-ARF)  
Spacing mm: 12.0

1st speed 1/min: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 21.0...23.0 \*  
> 1000S.: (19.0...25.0)

Automatic starting fuel delivery:

1st speed 1/min: 380  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 25.0...45.0

> 1000S.: -

2nd speed 1/min: 180  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 40.0...90.0  
> 1000S.: -

3rd speed 1/min: 100  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 40.0...90.0  
> 1000S.: -

Shutoff electromagnet:

Cut-in  
>min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.2...3.4
KF	mm: 5.1...5.5
MS	mm: 1.2...1.4
XK	mm: MIKROSCH.
XL	mm: 0.8...3.0 *
Ya	mm: 20.0...22.0
Yb	mm: 61.5...72.5

Remarks:

:  
:  
:  
Ya = Distance between VE flange and  
speed-control lever in idle  
position  
Measurement point = edge of control  
lever on drive end

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position  
Measurement point = edge of control  
lever on distributor-head end

On initial measurement, screw in  
residual-quantity adjusting screw 2 mm.

Following pump adjustment, screw out  
residual-quantity adjusting screw 2 mm.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : IVECO
Edition : 08.08.95
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/9F2050R467-1
Type number : 0 460 494 419
Customer Part-No. :

Customer-specific information
Customer : IVECO SOFIM

Engine : 8140.97.2500

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 022

Opening
Pressure> bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 450

Start of delivery
Prestroke mm: 0.2
> (from BDC): ±0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1400
Charge press. hPa: 1000
Setting value mm: 5.10...5.50
Shutoff
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1400
Charge press hPa: 1000
Setting value bar: 6.10...6.70
Shutoff
electromagnet>Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1200
Charge press. hPa: 1000
Del. quantity cm3/
> 1000S.: 67.5...68.5
Shutoff
electromagnet>Volt: 12.0
Dispersion cm3/: 3.0
> 1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
> 1000S.: 41.5...42.5
Shutoff
electromagnet>Volt: 12

Residual-Delivery Setting

Speed 1/min: 550
Charge press. hPa: -
Del. quantity cm3/
> 1000S.: 0.5...5.5
Shutoff
electromagnet Volt: 12.0

Full-load speed regulation

Speed 1/min: 2400
Charge press hPa: 1000
Del. quantity cm3/
> 1000S.: 35.00...41.00
Shutoff
electromagnet>Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 50.00...74.00
mind> 1000S.: 50.00
Shutoff
electromagnet>Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Charge press hPa: 1000
Inj.-qty. cm3/
difference> 1000S.: - 13.0..26.0 \*
Shutoff

electromagnet>Volt: 12.0  
TD-travel dif.measurement

1.Speed 1/min: 1250  
TD-travel  
difference> mm: - 0.7...0.9 \*  
Shutoff  
electromagnet>Volt: 12.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000  
Charge press hPa: 1000  
TD travel mm: 2.2...3.0  
> mm: (1.9...3.3)  
electromagnet>Volt: 12.0  
2nd speed 1/min: 1400  
Charge press hPa: 1000  
TD travel mm: 5.10...5.50  
> mm: (4.80...5.80)  
Shutoff  
electromagnet>Volt: 12  
3rd speed 1/min: 1800  
Charge press hPa: 1000  
TD travel mm: 8.10...8.90  
> mm: (7.80...9.20)  
Shutoff  
electromagnet>Volt: 12.0  
4th speed 1/min: 2050  
Charge press hPa: 1000  
TD travel mm: 9.60...10.4  
> mm: (9.30...10.7)  
Shutoff  
electromagnet>Volt: 12.0

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 3.10...3.70  
> bar: -  
Shutoff  
electromagnet>Volt: 12  
2nd speed 1/min: 1400  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 6.10...6.70  
> bar: -  
Shutoff  
electromagnet>Volt: 12  
3rd speed 1/min: 2050  
Charge press. hPa: 1000  
Supply-pump  
pressure> bar: 8.40...9.00  
> bar: -  
Shutoff

electromagnet>Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet>Volt: 12  
Overflow : 88.80...133.3  
quantity> cm<sup>3</sup>/10s: (73.80...148.30)  
2nd speed 1/min: 2050  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12  
Overflow : 97.20...180.50  
quantity> cm<sup>3</sup>/10s: (82.20...195.50)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 600  
Charge-air pressure-setting  
point> hPa: 350  
LDA-stroke mm: 5.0  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 47.5...48.5  
> 1000s.: (45.5...50.5)  
2nd speed 1/min: 2750  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...3.0  
> 1000s.: -  
3rd speed 1/min: 2400  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 35.0...41.0  
> 1000s.: (34.0...42.0)  
4th speed 1/min: 2050  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 68.0...71.0  
> 1000s.: (67.3...71.7)  
5th speed 1/min: 1200  
Charge press. hPa: 1000  
Shutoff  
electromagnet>Volt: 12  
Del. quantity cm<sup>3</sup>/: 67.5...68.5  
> 1000s.: (66.0...70.0)  
6th speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet>Volt: 12.0  
Del. quantity cm<sup>3</sup>/: 41.5...42.5  
> 1000s.: (39.5...44.5)



Electr. shutoff:

1st speed 1/min: 425  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 > 1000S.: (0.00...3.00)  
 Shutoff  
 electromagnet>volt: -

Damper set qty.:

LFG-setting:

Idle delivery:

1st speed 1/min: 425  
 Shutoff  
 electromagnet Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 10.5...14.5  
 > 1000S.: (9.5...15.5)  
 Dispersion cm<sup>3</sup>/: 2.5  
 > 1000S.: (2.5)

High Idle:

1st speed 1/mi: 500  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 11.0...15.0  
 > 1000S.: (10.0...16.0)

Rest delivery:

1st speed 1/min: 550  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 0.5...5.5  
 > 1000S.: -

Load-dependent start of delivery:  
 Inj.-qty.dif.measurement:

1st speed 1/min: 1000  
 Charge press. hPa: 1000  
 Inj.-qty. cm<sup>3</sup>/ : -19.0...21.0  
 difference> 1000S.: -  
 Shutoff  
 electromagnet>Volt: 12.0  
 2nd speed 1/min: 1000  
 Charge press. hPa: 1000  
 Inj.-qty. cm<sup>3</sup>/: 4.0...6.0 Z'  
 difference> 1000S.: -  
 Shutoff  
 electromagnet Volt: 12.0

TD-travel dif.measurement:  
 correttore anticipo iniezione (SV):  
 1st speed 1/min: 1250  
 Charge press. hPa: 1000  
 TD-travel : - 1.1...1.9 '

difference> mm: -  
 Shutoff  
 electromagnet>Volt: 12.0

SP press.-dif.measurement:  
 pompa di mandata (FP):  
 1st speed 1/min: 1000  
 Charge press. hPa: 1000  
 Supply pump-  
 pressure > : - 0.1...0.3 "  
 difference> bar: -  
 Shutoff  
 electromagnet>Volt: 12.0

Part-load del.at 3rd inj.-qty.  
 terza fermo della portata  
 stop (EGR set)  
 scarico) (ARF)  
 gaz d'échappement-ARF)  
 Spacing mm: 12.0

1st speed 1/min: 1000  
 Charge press. hPa: -  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 22.0...24.0  
 > 1000S.: (20.5...25.5)

Automatic starting fuel delivery:

1st speed 1/min: 350  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 36.0...48.0  
 > 1000S.: -

2nd speed 1/min: 200  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 50.0...74.0  
 > 1000S.: -

3rd speed 1/min: 100  
 Shutoff  
 electromagnet>Volt: 12.0  
 Del. quantity cm<sup>3</sup>/: 50.0...74.0  
 > 1000S.: -

Shutoff electromagnet:

Cut-in  
 >min voltage : 10.0  
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.6...6.0
MS	mm: 1.1...1.5

FH                   mm: KSB=13MM  
Ya                   mm: 41.3...43.3  
Yb                   mm: 41.8...47.8

Ajustement Potentiometer:

Angle for  
pot.       >       °: 25  
Supply voltage  
pot.       >       volt: 5.0  
Output volt  
pot.       >       volt: 2.1

Remarks:

⋮

Ya = Distance between VE flange and  
speed-control lever in idle  
position  
Measurement point = edge of control  
lever on drive end

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position  
Measurement point = edge of control  
lever on distributor-head end

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 18.05.95  
Test oil : ISO 4113  
Combination No. : 0 401 438 015  
Injection pump  
Pump designation : PE8R120/500/6RS1508  
EP type number : 0 411 428 002  
Governor  
Governor design. : RQV300...1150R6K  
Governor no. : 0 421 415 006  
Cust. part No. : 1 227 6687

Customer-spec. information  
Customer : MWM  
Motor : TBD 616-V16

TEST BENCH REQUIREMENTS

Inlet line : 3.1  
Test oil inlet  
temp. °C : 40  
Tolerance °C : + 2.0  
Overflow valve : 1 417 413 085  
Inlet press. bar : 3.0  
Tolerance bar : + 0.1  
Test nozzle holder  
assembly : 1 688 901 105  
Opening pressure  
bar : 208.5  
Tolerance bar : + 1.5  
Test lines : 1 680 750 089  
Outside diameter : 8.0  
x inside diameter : 3.0

E20

x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : + 1.0  
Prestroke mm : 4.95  
Tolerance mm : + 0.05  
test only : + 0.10  
Rack travel in mm : 21.00  
Tolerance mm : + 0.50  
Firing order : 1- 2- 7- 8- 3- 4-  
: 5- 6  
Phasing : 0-30-45-75-90-120  
: -315-345  
Tolerance : + 0.30  
Check  
tolerance °NW : + 0.50  
Start of delivery mark  
Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1150  
Rack travel in mm : 14.40  
Tolerance mm : + 0.05  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 387.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : + 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : + 4.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

Check tolerance  
cm<sup>3</sup>/1000S. : 8.0

Rated speed rpm : 300

Rack travel in mm : 5.00  
Tolerance mm : ± 0.20

Del. quantity  
cm<sup>3</sup>/1000 strokes : 30.0

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0

Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0

Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 300  
guide sleeve  
travel mm : 0.93  
Tolerance mm : ± 0.20

Rated speed rpm : 1215  
guide sleeve  
travel mm : 9.95  
Tolerance mm : ± 0.15

Rated speed rpm : 336  
guide sleeve  
travel mm : 1.77  
Tolerance mm : ± 0.25

Rated speed rpm : 386  
guide sleeve  
travel mm : 2.44  
Tolerance mm : ± 0.25

Rated speed rpm : 790  
guide sleeve  
travel mm : 4.81  
Tolerance mm : ± 0.25

Rated speed rpm : 1430  
guide sleeve  
travel mm : 13.50  
Tolerance mm : ± 0.50

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1150  
Aneroid pressure  
hPa : -  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 387.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0  
Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 8.0

RATED SPEED

rack travel mm : 13.40  
Rated speed rpm : 1195  
Tolerance 1/min : ± 5

rack travel mm : 4.00  
Tolerance 1/min : ± 15

rack travel mm : 0.50  
Tolerance mm : ± 0.50

LOW IDLE

Testing:

Rated speed rpm : 300  
rack travel mm : 5.00  
Tolerance mm : ± 0.10

TORQUE CONTROL

Rated speed rpm : 1150  
rack travel mm : 14.40  
Tolerance mm : ± 0.05

Rated speed rpm : 750  
rack travel mm : 11.40  
Tolerance mm : ± 0.10

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 1150

Pressure hPa : 1500  
rack travel mm : 14.40

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 1150  
rack travel mm : 8.00

Rated speed rpm : 1150

Pressure hPa : 1030  
rack travel mm : 14.30

Pressure hPa : 205  
rack travel mm : 8.10

START CUT-OUT

Rated speed rpm : < 250  
Check speed 1/min : < 270

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure hPa : -  
Rated speed rpm : 750  
Del. quantity cm<sup>3</sup>/1000 strokes : 300.0  
Tolerance cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance cm<sup>3</sup>/1000S. : ± 6.0  
Spreed Tolerance cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure hPa : -  
Rated speed rpm : 500  
Del. quantity cm<sup>3</sup>/1000 strokes : 200.0  
Tolerance cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance cm<sup>3</sup>/1000S. : ± 4.0  
Spreed Tolerance cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance cm<sup>3</sup>/1000S. : 12.0

BREAKAWAY

Rack travel in mm : 13.40  
Rated speed rpm : 1195  
Tolerance 1/min : ± 5

LOW IDLE

Rated speed rpm : 300  
rack travel mm : 5.00  
Tolerance mm : ± 0.20  
Del. quantity cm<sup>3</sup>/1000 strokes : 30.0  
Tolerance cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance cm<sup>3</sup>/1000S. : ± 6.0  
Spreed Tolerance cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance cm<sup>3</sup>/1000S. : 12.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 19.07.95  
Test oil : ISO 4113  
Combination No. : 0 401 438 015  
Injection pump  
Pump designation : PE8R120/520/6RS1508  
EP type number : 0 411 428 002  
Governor  
Governor design. : RQV300...1150R6K  
Governor no. : 0 421 415 006  
Cust. part No. : 1 227 6687

Customer-spec. information  
Customer : MWM  
Motor : TBD 616-V16

TEST BENCH REQUIREMENTS

Inlet line : 3.1  
Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0  
Overflow valve : 2 417 413 082  
Inlet press. bar : 3.0  
Tolerance bar : ± 0.1  
Test nozzle holder  
assembly : 1 688 901 105  
Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5  
Test lines : 1 680 750 089  
Outside diameter : 8.0

E23

x inside diameter : 3.0  
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0  
Prestroke mm : 4.95  
Tolerance mm : ± 0.05  
test only : ± 0.10  
Rack travel in mm : 21.00  
Tolerance mm : ± 0.50  
Firing order : 1- 2- 7- 8- 3- 4-  
: 5- 6  
Phasing : 0-30-45-75-90-120  
: -315-345  
Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.50  
Start of delivery mark  
Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1150  
Rack travel in mm : 14.40  
Tolerance mm : ± 0.05  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 387.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000s. : ± 4.0

<hr/>	
Spreed	
Tolerance	
cm <sup>3</sup> /1000 strokes :	8.0
<hr/>	
Check tolerance	
cm <sup>3</sup> /1000S.	: 12.0
Rated speed rpm :	300
Rack travel in mm :	5.00
Tolerance mm :	+ 0.20
Del. quantity	
cm <sup>3</sup> /1000 strokes :	30.0
Tolerance	
cm <sup>3</sup> /1000 strokes :	+ 3.0
Check tolerance	
cm <sup>3</sup> /1000S.	: + 6.0
Spreed	
Tolerance	
cm <sup>3</sup> /1000 strokes :	10.0
Check tolerance	
cm <sup>3</sup> /1000S.	: 14.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

---

GUIDE SLEEVE TRAVEL

Rated speed rpm :	300
guide sleeve	
travel mm :	0.93
Tolerance mm :	+ 0.20
Rated speed rpm :	1215
guide sleeve	
travel mm :	9.95
Tolerance mm :	+ 0.15
Rated speed rpm :	336
guide sleeve	
travel mm :	1.77
Tolerance mm :	+ 0.25
Rated speed rpm :	386
guide sleeve	
travel mm :	2.44
Tolerance mm :	+ 0.25
Rated speed rpm :	790
guide sleeve	
travel mm :	4.81
Tolerance mm :	+ 0.25
Rated speed rpm :	1430
guide sleeve	
travel mm :	13.50
Tolerance mm :	+ 0.50

---

GUIDE SLEEVE POSITION

Rated speed rpm :	1310
Rack travel in mm :	9.00
Tolerance mm :	+ 1.50

---

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm :	1150
Aneroid pressure	
hPa :	-
Del. quantity	
cm <sup>3</sup> /1000 strokes :	387.0
Tolerance	
cm <sup>3</sup> /1000 strokes :	+ 1.0
Check tolerance	
cm <sup>3</sup> /1000S.	: + 4.0
Spreed	
Tolerance	
cm <sup>3</sup> /1000 strokes :	8.0
Check tolerance	
cm <sup>3</sup> /1000S.	: 12.0

---

RATED SPEED

control lever	
position degree :	121.0
tolerance degree :	+ 4.0
rack travel mm :	13.40
Rated speed rpm :	1195
Tolerance 1/min :	+ 5
rack travel mm :	4.00
Rated speed rpm :	1295
Tolerance 1/min :	+ 15
rack travel mm :	0.50
Tolerance mm :	+ 0.50
Rated speed rpm :	1400

---

LOW IDLE

control lever	
position degree :	73.0
tolerance degree :	+ 4.0

Testing:

Rated speed rpm :	300
rack travel mm :	5.00
Tolerance mm :	+ 0.10

Rated speed rpm : 200  
CRT mm min. : > 6.50  
Rated speed rpm : 370

---

TORQUE CONTROL

Rated speed rpm : 1150  
rack travel mm : 14.40  
Tolerance mm : + 0.05

Rated speed rpm : 750  
rack travel mm : 11.80  
Tolerance mm : + 0.10

Rated speed rpm : 400  
rack travel mm : 10.20  
Tolerance mm : +- 0.30

---

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 1150  
Pressure hPa : 1500  
rack travel mm : 14.40  
Tolerance mm : + 0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 1150  
rack travel mm : 8.00  
Tolerance mm : + 0.20

Rated speed rpm : 1150

Pressure hPa : 900  
rack travel mm : 13.50  
Tolerance mm : + 0.20

Pressure hPa : 310  
rack travel mm : 9.00  
Tolerance mm : + 0.05

---

START CUT-OUT

Rated speed rpm : < 250  
Check speed 1/min : < 270

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure hPa : -  
Rated speed rpm : 750  
Del. quantity cm<sup>3</sup>/1000 strokes : 310.0  
Tolerance cm<sup>3</sup>/1000 strokes : + 3.0  
Check tolerance cm<sup>3</sup>/1000S. : + 6.0  
Spreed Tolerance cm<sup>3</sup>/1000 strokes : 10.0  
Check tolerance cm<sup>3</sup>/1000S. : 14.0

Aneroid pressure hPa : -  
Rated speed rpm : 500  
Del. quantity cm<sup>3</sup>/1000 strokes : 200.0  
Tolerance cm<sup>3</sup>/1000 strokes : + 1.0  
Check tolerance cm<sup>3</sup>/1000S. : + 4.0  
Spreed Tolerance cm<sup>3</sup>/1000 strokes : 10.0  
Check tolerance cm<sup>3</sup>/1000S. : 14.0

---

BREAKAWAY

Rack travel in mm : 13.40  
Rated speed rpm : 1195  
Tolerance 1/min : + 5

---

LOW IDLE

Rated speed rpm : 300  
rack travel mm : 5.00  
Tolerance mm : + 0.20  
Del. quantity cm<sup>3</sup>/1000 strokes : 30.0  
Tolerance cm<sup>3</sup>/1000 strokes : + 3.0  
Check tolerance cm<sup>3</sup>/1000S. : + 6.0  
Spreed Tolerance cm<sup>3</sup>/1000 strokes : 10.0  
Check tolerance cm<sup>3</sup>/1000S. : 14.0



---

End of test specification sheet



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 31.05.95  
Test oil : ISO 4113

Combination No. : 0 401 848 827

Injection pump  
Pump designation : PE8P110A320LS3862  
EP type number : 0 411 818 727

Governor  
Governor design. : RQV350...1Q50PA1205  
Governor no. : 0 421 814 124

Cust. part No. : 0210749802

Customer-spec. information

Customer : MB-NFZ  
Motor : OM442  
Power KW : 195.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Tolerance L/h : ± 10.0

Test nozzle holder  
assembly : 1 688 901 101

Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

Test Lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter : 2.0  
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 4.45  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 10.50  
Tolerance mm : ± 1.50

Firing order : 8-7-2-6-3  
: -5-4-1

Phasing : 0-45-90-135-180  
: -225-270-315

Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.50

Start of delivery mark

Barrel no. : 8

BASIC SETTING

Rated speed rpm : 1050

Rack travel in mm : 12.00  
Tolerance mm : ± 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 115.0

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0

Check tolerance  
 cm<sup>3</sup>/1000S. : + 3.5

---

Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 8.5

---

Check tolerance  
 cm<sup>3</sup>/1000S. : 13.0

Rated speed rpm : 350

Rack travel in mm : 7.70  
 Tolerance mm : + 0.30

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 19.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : + 3.0

Check tolerance  
 cm<sup>3</sup>/1000S. : + 5.5

Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 6.5

Check tolerance  
 cm<sup>3</sup>/1000S. : 11.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 350  
 guide sleeve  
 travel mm : 1.53  
 Tolerance mm : + 0.25

Rated speed rpm : 1107  
 guide sleeve  
 travel mm : 8.73  
 Tolerance mm : + 0.25

Rated speed rpm : 880  
 guide sleeve  
 travel mm : 5.84  
 Tolerance mm : + 0.25

Rated speed rpm : 432  
 guide sleeve  
 travel mm : 3.12  
 Tolerance mm : + 0.25

Rated speed rpm : 482  
 guide sleeve  
 travel mm : 3.74  
 Tolerance mm : + 0.25

Rated speed rpm : 590

guide sleeve  
 travel mm : 4.17  
 Tolerance mm : + 0.25

Rated speed rpm : 1159  
 guide sleeve  
 travel mm : 10.00  
 Tolerance mm : + 0.25

Rated speed rpm : 1250  
 guide sleeve  
 travel mm : 11.50  
 Tolerance mm : + 0.50

GUIDE SLEEVE POSITION

Rated speed rpm : 1110

Rack travel in mm : 16.50  
 Tolerance mm : + 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1050  
 Aneroid pressure  
 hPa : -

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 115.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : + 1.0

Check tolerance  
 cm<sup>3</sup>/1000S. : + 3.5

Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 8.5

Check tolerance  
 cm<sup>3</sup>/1000S. : 13.0

RATED SPEED

control lever  
 position degree : 120.0  
 tolerance degree : + 4.0

rack travel mm : 11.00  
 Rated speed rpm : 1095  
 Tolerance 1/min : + 5

rack travel mm : 4.00  
 Rated speed rpm : 1145  
 Tolerance 1/min : + 15

rack travel mm : 0.50  
 Tolerance mm : + 0.50  
 Rated speed rpm : 1350

---

LOW IDLE

control lever  
position degree : 72.0  
tolerance degree : +- 4.0

Testing:

Rated speed rpm : 350  
rack travel mm : 7.70  
Tolerance mm : +- 0.10

Rated speed rpm : 250

CRT mm min. : > 9.70

Rated speed rpm : 420

---

TORQUE CONTROL

Rated speed rpm : 1050  
rack travel mm : 12.00  
Tolerance mm : +- 0.05

Rated speed rpm : 600  
rack travel mm : 12.00  
Tolerance mm : +- 0.05

---

START CUT-OUT

Rated speed rpm : < 270  
Check  
speed 1/min : < 290

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : -  
Rated speed rpm : 600  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 119.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 5.5  
Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 11.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 14.0

---

BREAKAWAY

F01

Rack travel in mm : 11.00  
Rated speed rpm : 1095  
Tolerance 1/min : +- 5

---

STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 140.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 10.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 14.0

---

LOW IDLE

Rated speed rpm : 350  
rack travel mm : 7.70  
Tolerance mm : +- 0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 19.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 5.5  
Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.5  
Check tolerance  
cm<sup>3</sup>/1000S. : 11.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 02.11.93  
Test oil : ISO 4113  
Combination No. : 0 401 878 717B  
Injection pump  
Pump designation : PE8P110A320LS3853-1  
EP type number : 0 411 818 726  
Governor  
Governor design. : RSV400...1000P1A554  
Governor no. : 0 421 833 376  
Cust. part No. : 9273967

Customer-spec. information  
Customer : LIEBHERR  
Motor : D 9308 T  
Power KW : 255.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1  
Test oil inlet temp. °C : 40  
Tolerance °C : ± 2.0  
Overflow valve : 1 417 413 025  
Inlet press. bar : 1.5  
Tolerance bar : ± 0.1  
Test nozzle holder assembly : 0 681 343 009  
Opening pressure bar : 173.5  
Tolerance bar : ± 1.5  
Test lines : 1 680 750 089  
Outside diameter : 8.0

F02

x inside diameter : 3.0  
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0  
Prestroke mm : 3.85  
Tolerance mm : ± 0.05  
test only : ± 0.10  
Rack travel in mm : 10.50  
Tolerance mm : ± 0.50  
Firing order : 1- 8- 7- 2- 6  
                  : - 3- 5- 4  
Phasing : 0-45-90-135-180  
          : -225-270-315  
Tolerance : ± 0.30  
Check tolerance °NW : ± 0.50

BASIC SETTING

Rated speed rpm : 900  
Rack travel in mm : 13.45  
Tolerance mm : ± 0.05  
Del. quantity cm<sup>3</sup>/1000 strokes : 167.0  
Tolerance cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance cm<sup>3</sup>/1000S. : ± 4.0  
Speed Tolerance cm<sup>3</sup>/1000 strokes : 4.0

Check tolerance  
cm<sup>3</sup>/1000S. : 7.5

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

GUIDE SLEEVE POSITION

Rated speed rpm : 800  
Rack travel in mm : 0.50  
Tolerance mm : ± 0.20

FULL LOAD DELIVERY AT FULL LOAD STOP

Aneroid pressure  
hPa : -  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 167.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0  
Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 4.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 7.5

RATED SPEED

control lever  
position degree : 100.0  
tolerance degree : ± 4.0  
rack travel mm : 12.45  
Rated speed rpm : 945  
Tolerance 1/min : ± 5  
rack travel mm : 4.00  
Rated speed rpm : 1000  
Tolerance 1/min : ± 15  
rack travel mm : 0.85  
Tolerance mm : ± 0.55  
Rated speed rpm : 1100  
rack travel mm : 4.00  
Rated speed rpm : 1030

LOW IDLE

F03

control lever  
position degree : 79.0  
tolerance degree : ± 4.0

Setting point w/out bumper spring

Rated speed rpm : 400  
rack travel mm : 5.70

Testing:

Rated speed rpm : 400  
rack travel mm : 6.00  
Tolerance mm : ± 0.10

rack travel mm : 2.00  
Rated speed rpm : 460  
Tolerance 1/min : ± 30

TORQUE CONTROL

Rated speed rpm : 900  
rack travel mm : 13.45  
Tolerance mm : ± 0.05

Rated speed rpm : 500  
rack travel mm : 13.50  
Tolerance mm : ± 0.10

Rated speed rpm : 350  
rack travel mm : 14.90  
Tolerance mm : ± 0.30

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 550  
Pressure hPa : 1500  
rack travel mm : 13.45  
Tolerance mm : ± 0.05

MEASUREMENT

Rated speed rpm : 550  
Pressure hPa : 620  
rack travel mm : 12.80  
Tolerance mm : ± 0.10

Pressure hPa : 685  
rack travel mm : 13.20  
Tolerance mm : ± 0.05

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : -  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 153.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

BREAKAWAY

Rack travel in mm : 12.45  
Rated speed rpm : 945  
Tolerance 1/min : ± 5

---

STARTING FUEL DELIVERY

Rated speed rpm : 100  
rack travel mm : 20.50  
Tolerance mm : ± 0.50  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 160.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 10.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 14.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 06.04.89  
Test oil : ISO 4113

Combination No. : 0 402 046 751

Injection pump  
Pump designation : PES6P110A820LS3131  
EP type number : 0 412 016 715

Governor  
Governor design. : RQ300/1100PA723-  
Governor no. : 0 421 801 265

Cust. part No. :

Customer-spec. information  
Customer : MB-NFZ  
Motor : OM427H  
Power KW : 177.0

TEST BENCH REQUIREMENTS

Inlet line : 4.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : + 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 1.5

Overflow quantity  
min. l/h : 110  
Tolerance l/h : + 10.0

Test nozzle holder  
assembly : 0 681 343 009

Opening pressure  
bar : 173.5  
Tolerance bar : + 1.5

Test lines : 1 680 750 015

Outside diameter : 6.0

x inside diameter : 1.5  
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : + 1.0

Prestroke mm : 4.35  
Tolerance mm : + 0.05

test only : + 0.10

Rack travel in mm : 10.50  
Tolerance mm : + 0.50

Firing order : 6- 2- 4- 1- 5-  
: 3

Phasing : 0-60-120-180-240  
: -300  
Tolerance : + 0.30  
Check  
tolerance °NW : + 0.50

Start of delivery mark

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 1100

Rack travel in mm : 11.15  
Tolerance mm : + 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 141.0



Tolerance  
cm<sup>3</sup>/1000 strokes : + 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : + 4.0

Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 4.0

Check tolerance  
cm<sup>3</sup>/1000S. : 8.0

Del. quantity  
cm<sup>3</sup>/1000 strokes : 17.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 3.0

Check tolerance  
cm<sup>3</sup>/1000S. : + 6.0

Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 4.5

Check tolerance  
cm<sup>3</sup>/1000S. : 7.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 200  
guide sleeve  
travel mm : 0.30  
Tolerance mm : + 0.30

Rated speed rpm : 1100  
guide sleeve  
travel mm : 5.95  
Tolerance mm : + 0.05

Rated speed rpm : 300  
guide sleeve  
travel mm : 2.65  
Tolerance mm : + 0.05

Rated speed rpm : 550  
guide sleeve  
travel mm : 5.95  
Tolerance mm : + 0.05

GUIDE SLEEVE POSITION

Rated speed rpm : 550

Rack travel in mm : 15.55  
Tolerance mm : + 0.85

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1100

Aneroid pressure

hPa : -

Del. quantity

cm<sup>3</sup>/1000 strokes : 141.0

Tolerance

cm<sup>3</sup>/1000 strokes : + 1.0

Check tolerance

cm<sup>3</sup>/1000S. : + 4.0

Spreed

Tolerance

cm<sup>3</sup>/1000 strokes : 4.0

Check tolerance

cm<sup>3</sup>/1000S. : 8.0

RATED SPEED

control lever

position degree : 97.0

tolerance degree : + 3.0

rack travel mm : 10.20

Rated speed rpm : 1145

Tolerance 1/min : + 5

rack travel mm : 4.00

Rated speed rpm : 1190

Tolerance 1/min : + 15

rack travel mm : 0.75

Tolerance mm : + 0.75

Rated speed rpm : 1300

LOW IDLE

control lever

position degree : 76.0

tolerance degree : + 3.0

Testing:

Rated speed rpm : 300

rack travel mm : 7.20

Tolerance mm : + 0.10

rack travel mm : 2.00

Rated speed rpm : 380

Tolerance 1/min : + 20

Rated speed rpm : 100

CRT mm min. : > 8.80

---

TORQUE CONTROL

Rated speed rpm : 1100  
rack travel mm : 11.15  
Tolerance mm : ± 0.05

Rated speed rpm : 600  
rack travel mm : 11.15  
Tolerance mm : ± 0.05

---

START CUT-OUT

Rated speed rpm : < 220  
Check  
speed 1/min : < 240

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : -  
Rated speed rpm : 600  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 119.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 5.0

---

BREAKAWAY

Rack travel in mm : 10.20  
Rated speed rpm : 1145  
Tolerance 1/min : ± 5

---

STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 140.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 10.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 14.0

---

LOW IDLE

Del. quantity  
cm<sup>3</sup>/1000 strokes : 17.0

F07

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 4.5  
Check tolerance  
cm<sup>3</sup>/1000S. : 7.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 12.04.95  
Test oil : ISO 4113  
  
Combination No. : 0 402 046 824  
  
Injection pump  
Pump designation : PES6P120A320RS3279  
: -1  
EP type number : 0 412 026 758  
  
Governor  
Governor design. : RQ275/1050PA999-5  
Governor no. : 0 421 801 663  
  
Cust. part No. : CCEP-5112B 66-175

Customer-spec. information

Customer : RVI  
Motor : MIHR 062045 A/3  
Power KW : 186.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1  
  
Test oil inlet  
temp. °C : 40  
Tolerance °C : + 2.0  
  
Overflow valve : 2 417 413 078  
  
Inlet press. bar : 2.5  
Tolerance bar : + 0.1  
  
Test nozzle holde  
assembly : 1 688 901 105  
  
Opening pressure  
bar : 208.5  
Tolerance bar : + 1.5  
  
Test lines : 1 680 750 089

Outside diameter : 8.0  
x inside diameter : 3.0  
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : + 1.0  
  
Prestroke mm : 3.55  
Tolerance mm : + 0.05  
  
test only : + 0.10  
  
Rack travel in mm : 10.50  
Tolerance mm : + 1.50  
  
Firing order : 1- 5- 3- 6- 2-  
: 4  
  
Phasing : 0-60-120-180-240  
: -300  
Tolerance : + 0.30  
Check  
tolerance °NW : + 0.50  
  
Start of delivery mark  
Barrel no. : 1  
  
Beginning of delivery differende  
and maximum rack  
travel : 10.50  
Tolerance mm : + 0.50

BASIC SETTING

Rated speed rpm : 700  
  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 160.0

Tolerance  
cm<sup>3</sup>/1000 strokes : +- 1.0

---

Check tolerance  
cm<sup>3</sup>/1000S. : +- 4.0

---

Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

---

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

Rated speed rpm : 275

Rack travel in mm : -4.50  
Tolerance mm : +- 0.20

Del. quantity  
cm<sup>3</sup>/1000 strokes : 22.0

Tolerance  
cm<sup>3</sup>/1000 strokes : +- 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 5.0

Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

---

GUIDE SLEEVE TRAVEL

Rated speed rpm : 300  
guide sleeve  
travel mm : 2.35  
Tolerance mm : +- 0.10

Rated speed rpm : 1126  
guide sleeve  
travel mm : 6.38  
Tolerance mm : +- 0.10

Rated speed rpm : 1050  
guide sleeve  
travel mm : 6.00  
Tolerance mm : +- 0.10

Rated speed rpm : 582  
guide sleeve  
travel mm : 5.14  
Tolerance mm : +- 0.10

Rated speed rpm : 710  
guide sleeve  
travel mm : 6.00  
Tolerance mm : +- 0.10

Rated speed rpm : 1380  
guide sleeve  
travel mm : 11.50  
Tolerance mm : +- 0.50

---

GUIDE SLEEVE POSITION

Rated speed rpm : 750  
Rack travel in mm : 20.00  
Tolerance mm : +- 0.80

---

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 700  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 160.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 4.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

---

RATED SPEED

control lever  
position degree : 274.0  
tolerance degree : +- 4.0

rack travel mm : -1.00  
Rated speed rpm : 1138  
Tolerance 1/min : +- 8

rack travel mm : -7.20  
Rated speed rpm : 1245  
Tolerance 1/min : +- 15

rack travel mm : -10.75  
Tolerance mm : +- 0.55  
Rated speed rpm : 1350

---

LOW IDLE

control lever  
position degree : 253.0  
tolerance degree : +- 4.0

Testing:

Rated speed rpm : 275  
rack travel mm : -4.50  
Tolerance mm : + 0.10

rack travel mm : -9.25  
Rated speed rpm : 580  
Tolerance 1/min : + 20

Rated speed rpm : 200  
CRT mm max. : < -3.00

TORQUE CONTROL

Rated speed rpm : 700  
Rated speed rpm : 1050  
Tolerance mm : + 0.10

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 500  
Pressure hPa : 1000

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 500  
rack travel mm : -1.20  
Tolerance mm : + 0.20

Rated speed rpm : 500  
Pressure hPa : 220  
rack travel mm : -0.45  
Tolerance mm : + 0.15

Pressure hPa : 160  
rack travel mm : -0.85  
Tolerance mm : + 0.05

START CUT-OUT

Rated speed rpm : < 195  
Check speed 1/min : < 215

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure hPa : 1000  
Rated speed rpm : 1050  
Del. quantity cm3/1000 strokes : 156.0  
Tolerance cm3/1000 strokes : + 3.0  
Check tolerance cm3/1000S. : + 6.0

Aneroid pressure hPa : -  
Rated speed rpm : 500  
Del. quantity cm3/1000 strokes : 114.0  
Tolerance cm3/1000 strokes : + 1.0  
Check tolerance cm3/1000S. : + 4.0

BREAKAWAY

Rack travel in mm : -1.00  
Rated speed rpm : 1138  
Tolerance 1/min : + 8

STARTING FUEL DELIVERY

Del. quantity cm3/1000 strokes : 155.0  
Tolerance cm3/1000 strokes : + 10.0  
Check tolerance cm3/1000S. : + 14.0

LOW IDLE

Rated speed rpm : 275  
rack travel mm : -4.50  
Tolerance mm : + 0.20  
Del. quantity cm3/1000 strokes : 22.0  
Tolerance cm3/1000 strokes : + 2.0  
Check tolerance cm3/1000S. : + 5.0  
Speed Tolerance cm3/1000 strokes : 8.0  
Check tolerance cm3/1000S. : 12.0

---

End of test specification sheet



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 05.05.95  
Test oil : ISO 4113

Combination No. : 0 402 046 827

Injection pump  
Pump designation : PES6P120A320RS3284  
EP type number : 0 412 026 749

Governor  
Governor design. : RQ275/1050PA999-3  
Governor no. : 0 421 801 598

Cust. part No. : CCEP5119A

Customer-spec. information  
Customer : RVI  
Motor : MIDR/PR 062045  
Power KW : 186.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 2 417 413 071

Inlet press. bar : 2.5

Test nozzle holde  
assembly : 1 688 901 105

Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter : 3.0  
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 3.55  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 10.50  
Tolerance mm : ± 1.50

Firing order : 1- 5- 3- 6- 2-  
: 4

Phasing : 0-60-120-180-240  
: -300

Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.50

Start of delivery mark

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 700

Del. quantity  
cm<sup>3</sup>/1000 strokes : 155.0

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0

Check tolerance  
cm<sup>3</sup>/1000s. : ± 4.0

Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0  
 Rated speed rpm : 275  
 Rack travel in mm : -5.40  
 Tolerance mm : + 0.20  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 21.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : + 2.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : + 5.0  
 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 8.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 12.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

GUIDE SLEEVE POSITION

Rated speed rpm : 600  
 Rack travel in mm : 20.00  
 Tolerance mm : + 0.80

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 700  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 155.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : + 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : + 4.0  
 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 5.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0

RATED SPEED

rack travel mm : -1.00  
 Rated speed rpm : 1118  
 Tolerance 1/min : + 8  
 rack travel mm : -6.30  
 Rated speed rpm : 1205

Tolerance 1/min : + 15  
 rack travel mm : -9.85  
 Tolerance mm : + 0.55  
 Rated speed rpm : 1350

LOW IDLE

control lever  
 position degree : 252.0  
 tolerance degree : + 4.0

Testing:

Rated speed rpm : 275  
 rack travel mm : -5.40  
 Tolerance mm : + 0.10

rack travel mm : -8.10  
 Rated speed rpm : 340  
 Tolerance 1/min : + 20

Rated speed rpm : 200

CRT mm max. : < -4.00

TORQUE CONTROL

Rated speed rpm : 1050  
 Tolerance mm : + 0.10

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 500  
 Pressure hPa : 1000

MEASUREMENT

Pressure hPa : -  
 Rated speed rpm : 500  
 rack travel mm : -2.20  
 Tolerance mm : + 0.10

Rated speed rpm : 500

Pressure hPa : 360  
 rack travel mm : -0.40  
 Tolerance mm : + 0.20

Pressure hPa : 200  
 rack travel mm : -1.45  
 Tolerance mm : + 0.05



---

START CUT-OUT

Rated speed rpm : < 195  
Check  
speed 1/min : < 215

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 1000  
Rated speed rpm : 1050  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 149.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 81.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0

---

BREAKAWAY

Rack travel in mm : -1.00  
Rated speed rpm : 1118  
Tolerance 1/min : ± 8

---

STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 170.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 15.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 19.0

---

LOW IDLE

Rated speed rpm : 275  
rack travel mm : -5.40  
Tolerance mm : ± 0.20

Del. quantity  
cm<sup>3</sup>/1000 strokes : 21.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 5.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 05.05.95  
Test oil : ISO 4113  
Combination No. : 0 402 046 829

Injection pump  
Pump designation : PES6P120A320RS3284  
EP type number : 0 412 026 749

Governor  
Governor design. : RQV275...1050PA995  
: -1  
Governor no. : 0 421 813 941

Cust. part No. : CCEP 5120A 66-177

Customer-spec. information

Customer : RVI  
Motor : MIDR06.20.45 B/3  
Power KW : 195.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1  
  
Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0  
  
Overflow valve : 2 417 413 071

Inlet press. bar : 2.5  
  
Test nozzle holde  
assembly : 1 688 901 105  
  
Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

Test lines : 1 680 750 089  
Outside diameter : 8.0

F15

x inside diameter : 3.0  
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 3.55  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 10.50  
Tolerance mm : ± 1.50

Firing order : 1- 5- 3- 6- 2-  
: 4

Phasing : 0-60-120-180-240  
: -300

Tolerance : ± 0.30

Check  
tolerance °NW : ± 0.50

Start of delivery mark

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 700

Del. quantity  
cm<sup>3</sup>/1000 strokes : 157.0

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0

Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

---

Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0  
 Rated speed rpm : 275  
 Rack travel in mm : -5.20  
 Tolerance mm : ± 0.20  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 25.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : ± 2.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : ± 5.0  
 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 8.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 12.0

(B) SETTING OF INJECTION PUMP  
 WITH GOVERNOR

---

GUIDE SLEEVE POSITION

Rated speed rpm : 1220  
 Rack travel in mm : 10.50  
 Tolerance mm : ± 1.30

---

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 700  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 157.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : ± 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : ± 4.0  
 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 5.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0

---

RATED SPEED

control lever  
 position degree : 300.0  
 tolerance degree : ± 4.0  
 rack travel mm : -1.00

Rated speed rpm : 1125  
 Tolerance 1/min : ± 5  
 rack travel mm : -6.70  
 Rated speed rpm : 1220  
 Tolerance 1/min : ± 15  
 rack travel mm : -10.20  
 Tolerance mm : ± 0.55  
 Rated speed rpm : 1350

---

LOW IDLE

control lever  
 position degree : 247.0  
 tolerance degree : ± 4.0

Testing:

Rated speed rpm : 275  
 rack travel mm : -5.20  
 Tolerance mm : ± 0.10  
 Rated speed rpm : 200  
 CRT mm max. : < -3.60  
 Rated speed rpm : 390

---

TORQUE CONTROL

Rated speed rpm : 1050  
 Tolerance mm : ± 0.10

---

ANEROID/ALTITUDE  
 COMPENSATOR TEST

SETTING

Rated speed rpm : 500  
 Pressure hPa : 1000

MEASUREMENT

Pressure hPa : -  
 Rated speed rpm : 500  
 rack travel mm : -1.35  
 Tolerance mm : ± 0.15

Rated speed rpm : 500

Pressure hPa : 130  
 rack travel mm : -1.00  
 Tolerance mm : ± 0.10

Pressure hPa : 240  
rack travel mm : -0.35  
Tolerance mm : +- 0.05

---

START CUT-OUT

Rated speed rpm : < 210  
Check speed 1/min : < 230

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 1000  
Rated speed rpm : 1050  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 153.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 6.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 108.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 4.0

---

BREAKAWAY

Rack travel in mm : -1.00  
Rated speed rpm : 1125  
Tolerance 1/min : +- 5

---

STARTING FUEL DELIVERY

Del. quantity  
cm<sup>3</sup>/1000 strokes : 175.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 15.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 19.0

---

LOW IDLE

Rated speed rpm : 275  
rack travel mm : -5.20

Tolerance mm : +- 0.20  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 25.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 5.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

End of test specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 12.05.95  
Test oil : ISO 4113  
Combination No. : 0 402 046 836  
Injection pump  
Pump designation : PES6P120A320RS3303  
EP type number : 0 412 026 755  
Governor  
Governor design. : RQV275...1050PA1038K  
Governor no. : 0 421 815 313  
Cust. part No. : CCEP-5129B 66-195

## Customer-spec. information

Customer : RVI  
Motor : MIDR 062045 J/3  
Power KW : 169.0

## TEST BENCH REQUIREMENTS

Inlet line : 3.1  
Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0  
Overflow valve : 2 417 413 071  
Inlet press. bar : 2.5  
Tolerance bar : ± 0.1  
Test nozzle holde  
assembly : 1 688 901 105  
Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5  
Test lines : 1 680 750 089  
Outside diameter : 8.0

x inside diameter : 3.0  
x length mm : 600

## REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0  
Prestroke mm : 3.55  
Tolerance mm : ± 0.05  
test only : ± 0.10  
Rack travel in mm : 10.50  
Tolerance mm : ± 0.50  
Firing order : 1- 5- 3- 6- 2-  
: 4  
Phasing : 0-60-120-180-240  
: -300  
Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.50  
Start of delivery mark  
Barrel no. : 1

## BASIC SETTING

Rated speed rpm : 1050  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 157.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0  
Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

Check tolerance cm <sup>3</sup> /1000S.	:	9.0
Del. quantity cm <sup>3</sup> /1000 strokes	:	24.0
Tolerance cm <sup>3</sup> /1000 strokes	:	+ 2.0
Check tolerance cm <sup>3</sup> /1000S.	:	+ 5.0
Spreed Tolerance cm <sup>3</sup> /1000 strokes	:	8.0
Check tolerance cm <sup>3</sup> /1000S.	:	12.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm	:	275
guide sleeve travel mm	:	1.34
Tolerance mm	:	+ 0.25
Rated speed rpm	:	1140
guide sleeve travel mm	:	9.03
Tolerance mm	:	+ 0.25
Rated speed rpm	:	740
guide sleeve travel mm	:	6.16
Tolerance mm	:	+ 0.25
Rated speed rpm	:	336
guide sleeve travel mm	:	2.38
Tolerance mm	:	+ 0.25
Rated speed rpm	:	386
guide sleeve travel mm	:	3.12
Tolerance mm	:	+ 0.25
Rated speed rpm	:	440
guide sleeve travel mm	:	3.94
Tolerance mm	:	+ 0.25
Rated speed rpm	:	1530
guide sleeve travel mm	:	13.50
Tolerance mm	:	+ 0.50

GUIDE SLEEVE POSITION

Rated speed rpm	:	1330
Rack travel in mm	:	9.90
Tolerance mm	:	+ 2.00

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm	:	1050
Aneroid pressure hPa	:	-
Del. quantity cm <sup>3</sup> /1000 strokes	:	157.0
Tolerance cm <sup>3</sup> /1000 strokes	:	+ 1.0
Check tolerance cm <sup>3</sup> /1000S.	:	+ 4.0
Spreed Tolerance cm <sup>3</sup> /1000 strokes	:	5.0
Check tolerance cm <sup>3</sup> /1000S.	:	9.0

RATED SPEED

control lever position degree	:	56.0
tolerance degree	:	+ 4.0
control lever position degree	:	287.0
tolerance degree	:	+ 4.0
rack travel mm	:	-1.00
Rated speed rpm	:	1110
Tolerance 1/min	:	+ 5
rack travel mm	:	-7.00
Rated speed rpm	:	1240
Tolerance 1/min	:	+ 15
rack travel mm	:	-10.55
Tolerance mm	:	+ 0.55
Rated speed rpm	:	1350

LOW IDLE

control lever position degree	:	242.0
tolerance degree	:	+ 4.0
control lever position degree	:	12.0
tolerance degree	:	+ 4.0

Testing:

Rated speed rpm : 275  
rack travel mm : -5.50  
Tolerance mm :  $\pm$  0.20

Rated speed rpm : 200

CRT mm max. :  $<$  -4.70

Rated speed rpm : 330

---

TORQUE CONTROL

Rated speed rpm : 1050

Rated speed rpm : 700  
rack travel mm : -0.80  
Tolerance mm :  $\pm$  0.10

---

START CUT-OUT

Rated speed rpm :  $<$  235  
Check  
speed 1/min :  $<$  255

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : -  
Rated speed rpm : 700  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 137.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  3.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  6.0

---

BREAKAWAY

Rack travel in mm : -1.00  
Rated speed rpm : 1110  
Tolerance 1/min :  $\pm$  5

---

STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 170.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  15.0

Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  19.0

---

LOW IDLE

Del. quantity  
cm<sup>3</sup>/1000 strokes : 24.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  2.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  5.0  
Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 04.01.95  
Test oil : ISO 4113

Combination No. : 0 402 046 855

Injection pump  
Pump designation : PE6P110A320RS3329  
EP type number : 0 412 016 743

Governor  
Governor design. : RQV325...1300PA1119  
Governor no. : 0 421 814 083

Cust. part No. : 1284418/4

---

Customer-spec. information  
Customer : DAF  
Motor : NS156M  
Power KW : 156.0

---

TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Test nozzle holde  
assembly : 1 688 901 101

Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter : 2.0  
x length mm : 600

---

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

---

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 4.85  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 20.50  
Tolerance mm : ± 0.50

Firing order : 1- 5- 3- 6- 2-  
: 4

Phasing : 0-60-120-180-240  
: -300

Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.50

Start of delivery mark

Barrel no. : 1

---

BASIC SETTING

Rated speed rpm : 1000

---

Rack travel in mm : 11.85  
Tolerance mm : ± 0.05

---

Del. quantity  
cm<sup>3</sup>/1000 strokes : 144.0

---

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0

---



Check tolerance  
cm<sup>3</sup>/1000S. : + 4.0

---

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 4.0

---

Check tolerance  
cm<sup>3</sup>/1000S. : 7.5

Rated speed rpm : 325

Rack travel in mm : 5.20  
Tolerance mm : + 0.10

Del. quantity  
cm<sup>3</sup>/1000 strokes : 26.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 2.5

Check tolerance  
cm<sup>3</sup>/1000S. : + 5.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 12.0

Check tolerance  
cm<sup>3</sup>/1000S. : 15.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

---

GUIDE SLEEVE TRAVEL

Rated speed rpm : 325  
guide sleeve  
travel mm : 1.33  
Tolerance mm : + 0.15

Rated speed rpm : 1353  
guide sleeve  
travel mm : 8.29  
Tolerance mm : + 0.20

Rated speed rpm : 900  
guide sleeve  
travel mm : 4.92  
Tolerance mm : + 0.25

Rated speed rpm : 405  
guide sleeve  
travel mm : 2.07  
Tolerance mm : + 0.25

Rated speed rpm : 455  
guide sleeve  
travel mm : 2.52  
Tolerance mm : + 0.25

Rated speed rpm : 530

guide sleeve  
travel mm : 2.93  
Tolerance mm : + 0.25

Rated speed rpm : 1640  
guide sleeve  
travel mm : 11.50  
Tolerance mm : + 0.50

---

GUIDE SLEEVE POSITION

Rated speed rpm : 1450

Rack travel in mm : 10.80  
Tolerance mm : + 1.30

---

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1000  
Aneroid pressure  
hPa : 1000

Del. quantity  
cm<sup>3</sup>/1000 strokes : 144.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : + 4.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 4.0

Check tolerance  
cm<sup>3</sup>/1000S. : 7.5

---

RATED SPEED

control lever  
position degree : 122.0  
tolerance degree : + 4.0

rack travel mm : 10.85  
Rated speed rpm : 1342  
Tolerance 1/min : + 5

rack travel mm : 4.00  
Rated speed rpm : 1460  
Tolerance 1/min : + 15

rack travel mm : 0.50  
Tolerance mm : + 0.50  
Rated speed rpm : 1600

---

LOW IDLE

control lever  
position degree : 83.0  
tolerance degree : ± 4.0

Testing:

Rated speed rpm : 325  
rack travel mm : 4.50  
Tolerance mm : ± 0.10

Rated speed rpm : 225

CRT mm min. : > 6.00

Rated speed rpm : 375

---

TORQUE CONTROL

Rated speed rpm : 1000  
rack travel mm : 11.85  
Tolerance mm : ± 0.05

Rated speed rpm : 700  
rack travel mm : 11.85  
Tolerance mm : ± 0.05

Rated speed rpm : 1300  
rack travel mm : 11.85  
Tolerance mm : ± 0.05

---

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 600  
Pressure hPa : 1000  
rack travel mm : 11.85  
Tolerance mm : ± 0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 600  
rack travel mm : 7.35  
Tolerance mm : ± 0.20

Rated speed rpm : 600

Pressure hPa : 370  
rack travel mm : 10.75  
Tolerance mm : ± 0.05

Pressure hPa : 200  
rack travel mm : 8.40  
Tolerance mm : ± 0.10

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 1000  
Rated speed rpm : 700  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 145.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 5.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 600  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 98.5  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 3.5

---

BREAKAWAY

Rack travel in mm : 10.85  
Rated speed rpm : 1342  
Tolerance 1/min : ± 5

---

LOW IDLE

Rated speed rpm : 325  
rack travel mm : 5.20  
Tolerance mm : ± 0.10  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 26.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 2.5  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 5.0  
Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 12.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 15.0

---

End of test specification sheet



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 04.01.95  
Test oil : ISO 4113

Combination No. : 0 402 046 856

Injection pump  
Pump designation : PE6P110A320RS3329Z  
EP type number : 0 412 016 744

Governor  
Governor design. : RQV325...1300PA1119  
Governor no. : 0 421 814 083

Cust. part No. : 1284417/5

Customer-spec. information  
Customer : DAF  
Motor : NS133M  
Power KW : 133.0

TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Test nozzle holde  
assembly : 1 688 901 101

Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

Test Lines : 1 680 750 008

Outside diameter : 6.0

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x inside diameter : 2.0  
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 4.85  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 20.50  
Tolerance mm : ± 0.50

Firing order : 1- 5- 3- 6- 2-  
: 4

Phasing : 0-60-120-180-240  
: -300

Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.50

Start of delivery mark

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1000

Rack travel in mm : 11.85  
Tolerance mm : ± 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 146.0

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0

Check tolerance  
 cm<sup>3</sup>/1000S. : +- 4.0

---

Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 4.0

---

Check tolerance  
 cm<sup>3</sup>/1000S. : 7.5

Rated speed rpm : 325

Rack travel in mm : 5.20  
 Tolerance mm : +- 0.10  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 26.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : +- 2.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. : +- 5.0

Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 12.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 15.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 325  
 guide sleeve  
 travel mm : 1.33  
 Tolerance mm : +- 0.15

Rated speed rpm : 1353  
 guide sleeve  
 travel mm : 8.29  
 Tolerance mm : +- 0.20

Rated speed rpm : 900  
 guide sleeve  
 travel mm : 4.92  
 Tolerance mm : +- 0.25

Rated speed rpm : 405  
 guide sleeve  
 travel mm : 2.07  
 Tolerance mm : +- 0.25

Rated speed rpm : 455  
 guide sleeve  
 travel mm : 2.52  
 Tolerance mm : +- 0.25

Rated speed rpm : 530

guide sleeve  
 travel mm : 2.93  
 Tolerance mm : +- 0.25

Rated speed rpm : 1640  
 guide sleeve  
 travel mm : 11.50  
 Tolerance mm : +- 0.50

GUIDE SLEEVE POSITION

Rated speed rpm : 1450  
 Rack travel in mm : 10.80  
 Tolerance mm : +- 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1000  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 146.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : +- 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : +- 4.0  
 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 4.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 7.5

RATED SPEED

control lever  
 position degree : 122.0  
 tolerance degree : +- 4.0

rack travel mm : 10.85  
 Rated speed rpm : 1342  
 Tolerance 1/min : +- 5

rack travel mm : 4.00  
 Rated speed rpm : 1460  
 Tolerance 1/min : +- 15

rack travel mm : 0.50  
 Tolerance mm : +- 0.50  
 Rated speed rpm : 1600

LOW IDLE

control lever  
position degree : 83.0  
tolerance degree : +- 4.0

Testing:

Rated speed rpm : 325  
rack travel mm : 4.50  
Tolerance mm : +- 0.10

Rated speed rpm : 225

CRT mm min. : > 6.00

Rated speed rpm : 375

---

TORQUE CONTROL

Rated speed rpm : 1000  
rack travel mm : 11.85  
Tolerance mm : +- 0.05

Rated speed rpm : 700  
rack travel mm : 11.85  
Tolerance mm : +- 0.05

Rated speed rpm : 1300  
rack travel mm : 11.85  
Tolerance mm : +- 0.05

---

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 600  
Pressure hPa : 1000  
rack travel mm : 11.85  
Tolerance mm : +- 0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 600  
rack travel mm : 6.60  
Tolerance mm : +- 0.20

Rated speed rpm : 600

Pressure hPa : 310  
rack travel mm : 10.55  
Tolerance mm : +- 0.05

Pressure hPa : 130  
rack travel mm : 7.85  
Tolerance mm : +- 0.10

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---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 1000  
Rated speed rpm : 700  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 145.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 5.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 600  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 88.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 3.5

---

BREAKAWAY

Rack travel in mm : 10.85  
Rated speed rpm : 1342  
Tolerance 1/min : +- 5

---

LOW IDLE

Rated speed rpm : 325  
rack travel mm : 5.20  
Tolerance mm : +- 0.10  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 26.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 2.5  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 5.0  
Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 12.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 15.0

---

End of test specification sheet



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition : 04.01.95
Test oil : ISO 4113
Combination No. : 0 402 046 861
Injection pump
Pump designation : PE6P110A32ORS3329
EP type number : 0 412 016 743
Governor
Governor design. : RQ325/1300PA1150
Governor no. : 0 421 801 716
Cust. part No. : 1284420/4

Customer-spec. information
Customer : DAF
Motor : NS156M
Power KW : 156.0

TEST BENCH REQUIREMENTS

Inlet line : 3.2
Test oil inlet
temp. °C : 40
Tolerance °C : ± 2.0
Overflow valve : 1 417 413 025
Inlet press. bar : 1.5
Tolerance bar : ± 0.1
Test nozzle holde
assembly : 1 688 901 101
Opening pressure
bar : 208.5
Tolerance bar : ± 1.5
Test lines : 1 680 750 008
Outside diameter : 6.0

G01

x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : ± 1.0
Prestroke mm : 4.85
Tolerance mm : ± 0.05
test only : ± 0.10
Rack travel in mm : 20.50
Tolerance mm : ± 0.50
Firing order : 1- 5- 3- 6- 2-
: 4
Phasing : 0-60-120-180-240
: -300
Tolerance : ± 0.30
Check
tolerance °NW : ± 0.50
Start of delivery mark
Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1000
Rack travel in mm : 11.85
Tolerance mm : ± 0.05
Del. quantity
cm3/1000 strokes : 144.0
Tolerance
cm3/1000 strokes : ± 1.0
Check tolerance
cm3/1000S. : ± 4.0



Speed	
Tolerance	
cm <sup>3</sup> /1000 strokes :	4.0
<hr/>	
Check tolerance	
cm <sup>3</sup> /1000S. :	7.5
Rated speed rpm :	325
Rack travel in mm :	5.20
Tolerance mm :	+ 0.10
Del. quantity	
cm <sup>3</sup> /1000 strokes :	26.0
Tolerance	
cm <sup>3</sup> /1000 strokes :	+ 2.5
Check tolerance	
cm <sup>3</sup> /1000S. :	+ 5.0
Speed	
Tolerance	
cm <sup>3</sup> /1000 strokes :	12.0
Check tolerance	
cm <sup>3</sup> /1000S. :	15.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm :	325
guide sleeve	
travel mm :	1.99
Tolerance mm :	+ 0.10
Rated speed rpm :	1351
guide sleeve	
travel mm :	6.37
Tolerance mm :	+ 0.10
Rated speed rpm :	1300
guide sleeve	
travel mm :	6.00
Tolerance mm :	+ 0.10
Rated speed rpm :	427
guide sleeve	
travel mm :	3.54
Tolerance mm :	+ 0.10
Rated speed rpm :	590
guide sleeve	
travel mm :	6.00
Tolerance mm :	+ 0.10
Rated speed rpm :	1570
guide sleeve	
travel mm :	11.50
Tolerance mm :	+ 0.50

GUIDE SLEEVE POSITION

Rated speed rpm :	650
Rack travel in mm :	20.00
Tolerance mm :	+ 0.80

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm :	1000
Aneroid pressure	
hPa :	1000
Del. quantity	
cm <sup>3</sup> /1000 strokes :	144.0
Tolerance	
cm <sup>3</sup> /1000 strokes :	+ 1.0
Check tolerance	
cm <sup>3</sup> /1000S. :	+ 4.0
Speed	
Tolerance	
cm <sup>3</sup> /1000 strokes :	4.0
Check tolerance	
cm <sup>3</sup> /1000S. :	7.5

RATED SPEED

control lever	
position degree :	93.0
tolerance degree :	+ 4.0
rack travel mm :	10.85
Rated speed rpm :	1345
Tolerance 1/min :	+ 5
rack travel mm :	4.00
Rated speed rpm :	1450
Tolerance 1/min :	+ 15
rack travel mm :	0.50
Tolerance mm :	+ 0.50
Rated speed rpm :	1600

LOW IDLE

control lever	
position degree :	72.0
tolerance degree :	+ 4.0

Testing:

Rated speed rpm :	325
rack travel mm :	4.50
Tolerance mm :	+ 0.10

rack travel mm : 2.00  
Rated speed rpm : 415  
Rated speed rpm : 225  
CRT mm min. : > 5.90

---

TORQUE CONTROL

Rated speed rpm : 1000  
rack travel mm : 11.85  
Tolerance mm : ± 0.05

Rated speed rpm : 700  
rack travel mm : 11.85  
Tolerance mm : ± 0.05

Rated speed rpm : 1300  
rack travel mm : 11.85  
Tolerance mm : ± 0.05

---

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 600  
Pressure hPa : 1000  
rack travel mm : 11.85  
Tolerance mm : ± 0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 600  
rack travel mm : 7.35  
Tolerance mm : ± 0.20

Rated speed rpm : 600

Pressure hPa : 370  
rack travel mm : 10.75  
Tolerance mm : ± 0.05

Pressure hPa : 200  
rack travel mm : 8.40  
Tolerance mm : ± 0.10

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 1000  
Rated speed rpm : 700

Del. quantity  
cm<sup>3</sup>/1000 strokes : 145.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 5.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 600  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 98.5  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 3.5

---

BREAKAWAY

Rack travel in mm : 10.85  
Rated speed rpm : 1345  
Tolerance 1/min : ± 5

---

LOW IDLE

Rated speed rpm : 325  
rack travel mm : 5.20  
Tolerance mm : ± 0.10  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 26.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 2.5  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 5.0  
Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 12.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 15.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 26.06.95  
Test oil : ISO 4113  
  
Combination No. : 0 402 046 870  
  
Injection pump  
Pump designation : PES6P120A320RS3303  
: -1  
EP type number : 0 412 026 782  
  
Governor  
Governor design. : RQV275...1050PA1038  
: -1K  
Governor no. : 0 421 815 478  
  
Cust. part No. : CCEP-5129C 66-195

Customer-spec. information

Customer : RVI  
Motor : MIDR 062045 J/3  
Power KW : 169.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1  
  
Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0  
  
Overflow valve : 2 417 413 071  
  
Inlet press. bar : 2.5  
Tolerance bar : ± 0.1  
  
Test nozzle holde  
assembly : 1 688 901 105  
  
Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5  
  
Test lines : 1 680 750 089

G04

Outside diameter : 8.0  
x inside diameter : 3.0  
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0  
  
Prestroke mm : 3.60  
Tolerance mm : ± 0.05  
test only : ± 0.10  
  
Rack travel in mm : 10.50  
Tolerance mm : ± 0.50  
  
Firing order : 1- 5- 3- 6- 2-  
: 4  
  
Phasing : 0-60-120-180-240  
: -300  
Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.50  
  
Start of delivery mark  
  
Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1050  
  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 159.0  
  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0  
  
Speed

Tolerance  
 cm<sup>3</sup>/1000 strokes : 5.0

---

Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 27.0

Tolerance  
 cm<sup>3</sup>/1000 strokes : + 2.0

Check tolerance  
 cm<sup>3</sup>/1000S. : + 5.0

Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 8.0

Check tolerance  
 cm<sup>3</sup>/1000S. : 12.0

(B) SETTING OF INJECTION PUMP  
 WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 275  
 guide sleeve  
 travel mm : 1.29  
 Tolerance mm : + 0.20

Rated speed rpm : 1143  
 guide sleeve  
 travel mm : 9.05  
 Tolerance mm : + 0.15

Rated speed rpm : 742  
 guide sleeve  
 travel mm : 6.16  
 Tolerance mm : + 0.25

Rated speed rpm : 337  
 guide sleeve  
 travel mm : 2.38  
 Tolerance mm : + 0.25

Rated speed rpm : 387  
 guide sleeve  
 travel mm : 3.12  
 Tolerance mm : + 0.25

Rated speed rpm : 440  
 guide sleeve  
 travel mm : 3.94  
 Tolerance mm : + 0.25

Rated speed rpm : 1530  
 guide sleeve  
 travel mm : 13.50  
 Tolerance mm : + 0.50

GUIDE SLEEVE POSITION

Rated speed rpm : 1250

Rack travel in mm : 10.00  
 Tolerance mm : + 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1050  
 Aneroid pressure  
 hPa : -

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 159.0

Tolerance  
 cm<sup>3</sup>/1000 strokes : + 1.0

Check tolerance  
 cm<sup>3</sup>/1000S. : + 4.0

Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 5.0

Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0

RATED SPEED

control lever  
 position degree : 295.0  
 tolerance degree : + 4.0

rack travel mm : -1.00  
 Rated speed rpm : 1110  
 Tolerance 1/min : + 8

rack travel mm : -7.00  
 Rated speed rpm : 1230  
 Tolerance 1/min : + 15

rack travel mm : -10.50  
 Tolerance mm : + 0.50  
 Rated speed rpm : 1350

LOW IDLE

control lever  
 position degree : 250.0  
 tolerance degree : + 4.0

Testing:

Rated speed rpm : 275  
 rack travel mm : -5.70  
 Tolerance mm : + 0.20

Rated speed rpm : 200  
CRT mm max. : < -4.30  
Rated speed rpm : 330

---

#### TORQUE CONTROL

Rated speed rpm : 1050  
Rated speed rpm : 700  
rack travel mm : -1.05  
Tolerance mm : + 0.10

---

#### START CUT-OUT

Rated speed rpm : < 225  
Check  
speed 1/min : < 245

---

#### FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : -  
Rated speed rpm : 700  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 151.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : + 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : + 6.0

---

#### BREAKAWAY

Rack travel in mm : -1.00  
Rated speed rpm : 1110  
Tolerance 1/min : + 8

---

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 207.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : + 15.0  
Check tolerance  
cm<sup>3</sup>/1000S. : + 19.0

---

#### LOW IDLE

Del. quantity  
cm<sup>3</sup>/1000 strokes : 27.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : + 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. : + 5.0  
Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 21.07.95  
Test oil : ISO 4113

Combination No. : 0 402 076 748

Injection pump  
Pump designation : PES6P110A720RS3305  
: -1  
EP type number : 0 412 016 742

Governor  
Governor design. : RSV300...1100P1A555  
Governor no. : 0 421 833 379

Cust. part No. : 9271058

Customer-spec. information  
Customer : LIEBHERR  
Motor : D 926 TI  
Power KW : 210.0

TEST BENCH REQUIREMENTS

Inlet line : 4.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 049

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Overflow quantity  
min. l/h : 130  
Tolerance l/h : ± 10.0

Test nozzle holder  
assembly : 1 688 901 101

Opening pressure  
bar : 207.5  
Tolerance bar : ± 1.5

607

Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter : 2.0  
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 3.20  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 10.50  
Tolerance mm : ± 1.50

Firing order : 1- 5- 3- 6- 2-  
: 4

Phasing : 0-60-120-180-240  
: -300

Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.50

Start of delivery mark

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1000

Rack travel in mm : 11.25  
Tolerance mm : ± 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 165.0

<hr/>	
Tolerance	
cm <sup>3</sup> /1000 strokes	: ± 1.0
<hr/>	
Check tolerance	
cm <sup>3</sup> /1000S.	: ± 3.5
<hr/>	
Spreed	
Tolerance	
cm <sup>3</sup> /1000 strokes	: 4.0
<hr/>	
Check tolerance	
cm <sup>3</sup> /1000S.	: 7.5
<hr/>	
Rated speed rpm	: 400
<hr/>	
Rack travel in mm	: 4.40
Tolerance mm	: ± 0.10
Del. quantity	
cm <sup>3</sup> /1000 strokes	: 36.0
Tolerance	
cm <sup>3</sup> /1000 strokes	: ± 3.0
Check tolerance	
cm <sup>3</sup> /1000S.	: ± 5.5
Spreed	
Tolerance	
cm <sup>3</sup> /1000 strokes	: 4.5
Check tolerance	
cm <sup>3</sup> /1000S.	: 7.5

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

---

GUIDE SLEEVE POSITION

Rated speed rpm	: 800
<hr/>	
Rack travel in mm	: 0.50
Tolerance mm	: ± 0.20

---

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm	: 1000
Aneroid pressure	
hPa	: 1100
Del. quantity	
cm <sup>3</sup> /1000 strokes	: 165.0
Tolerance	
cm <sup>3</sup> /1000 strokes	: ± 1.0
Check tolerance	
cm <sup>3</sup> /1000S.	: ± 3.5
Spreed	
Tolerance	
cm <sup>3</sup> /1000 strokes	: 4.0
Check tolerance	
cm <sup>3</sup> /1000S.	: 7.5

---

RATED SPEED

control lever	
position degree	: 108.0
tolerance degree	: ± 4.0
<hr/>	
rack travel mm	: 10.25
Rated speed rpm	: 1040
Tolerance 1/min	: ± 5
<hr/>	
rack travel mm	: 4.00
Rated speed rpm	: 1095
Tolerance 1/min	: ± 15
<hr/>	
rack travel mm	: 0.85
Tolerance mm	: ± 0.55
Rated speed rpm	: 1260
<hr/>	
rack travel mm	: 4.00
Rated speed rpm	: 1100

---

LOW IDLE

control lever	
position degree	: 78.0
tolerance degree	: ± 4.0

Setting point w/out bumper spring

Rated speed rpm	: 400
rack travel mm	: 3.90

Testing:

Rated speed rpm	: 400
rack travel mm	: 4.40
Tolerance mm	: ± 0.10

rack travel mm	: 2.00
Rated speed rpm	: 450
Tolerance 1/min	: ± 30

---

TORQUE CONTROL

Rated speed rpm	: 1000
rack travel mm	: 11.25
Tolerance mm	: ± 0.05

Rated speed rpm	: 600
rack travel mm	: 11.25
Tolerance mm	: ± 0.10

Rated speed rpm	: 500
rack travel mm	: 11.25

Tolerance mm :  $\pm$  0.10  
Rated speed rpm : 450  
rack travel mm : 12.20  
Tolerance mm :  $\pm$  0.10

---

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 550  
Pressure hPa : 1100  
rack travel mm : 11.25  
Tolerance mm :  $\pm$  0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 550  
rack travel mm : 9.75  
Tolerance mm :  $\pm$  0.10

Rated speed rpm : 550

Pressure hPa : 650  
rack travel mm : 11.00  
Tolerance mm :  $\pm$  0.05

Pressure hPa : 550  
rack travel mm : 10.25  
Tolerance mm :  $\pm$  0.10

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 1100  
Rated speed rpm : 600  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 186.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  2.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  5.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 550  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 152.5  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  1.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  3.5

---

BREAKAWAY

Rack travel in mm : 10.25  
Rated speed rpm : 1040  
Tolerance 1/min :  $\pm$  5

---

STARTING FUEL DELIVERY

Rated speed rpm : 100  
rack travel mm : 20.50  
Tolerance mm :  $\pm$  0.50  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 145.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  10.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  14.0

---

LOW IDLE

Rated speed rpm : 400  
rack travel mm : 4.40  
Tolerance mm :  $\pm$  0.10  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 36.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  3.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  5.5  
Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 4.5  
Check tolerance  
cm<sup>3</sup>/1000S. : 7.5

---

End of test specification sheet



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 21.07.95  
Test oil : ISO 4113  
  
Combination No. : 0 402 076 748A  
  
Injection pump  
Pump designation : PES6P110A72ORS3305  
: -1  
EP type number : 0 412 016 742  
  
Governor  
Governor design. : RSV300...1100P1A555  
Governor no. : 0 421 833 379

Cust. part No. : 9271058

Customer-spec. information  
Customer : LIEBHERR  
Motor : D 926 TI  
Power KW : 210.0

TEST BENCH REQUIREMENTS

Inlet line : 4.1  
  
Test oil inlet  
temp. °C : 40  
Tolerance °C : + 2.0  
  
Overflow valve : 1 417 413 049  
  
Inlet press. bar : 1.5  
Tolerance bar : + 0.1  
  
Overflow quantity  
min. l/h : 130  
Tolerance l/h : + 10.0  
  
Test nozzle holde  
assembly : 1 688 901 101  
  
Opening pressure  
bar : 207.0  
Tolerance bar : + 1.5

G10

Test lines : 1 680 750 008  
Outside diameter : 6.0  
x inside diameter : 2.0  
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : + 1.0  
  
Prestroke mm : 3.20  
Tolerance mm : + 0.05  
  
test only : + 0.10  
  
Rack travel in mm : 10.50  
Tolerance mm : + 1.50  
  
Firing order : 1- 5- 3- 6- 2-  
: 4  
  
Phasing : 0-60-120-180-240  
: -300  
Tolerance : + 0.30  
Check  
tolerance °NW : + 0.50

Start of delivery mark

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1000  
  
Rack travel in mm : 11.25  
Tolerance mm : + 0.05  
  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 165.0

<hr/>	
Tolerance	
cm <sup>3</sup> /1000 strokes	: ± 1.0
<hr/>	
Check tolerance	
cm <sup>3</sup> /1000S.	: ± 3.5
<hr/>	
Spreed	
Tolerance	
cm <sup>3</sup> /1000 strokes	: 4.0
<hr/>	
Check tolerance	
cm <sup>3</sup> /1000S.	: 7.5
<hr/>	
Rated speed rpm	: 400
<hr/>	
Rack travel in mm	: 4.40
Tolerance mm	: ± 0.10
Del. quantity	
cm <sup>3</sup> /1000 strokes	: 36.0
Tolerance	
cm <sup>3</sup> /1000 strokes	: ± 3.0
Check tolerance	
cm <sup>3</sup> /1000S.	: ± 5.5
Spreed	
Tolerance	
cm <sup>3</sup> /1000 strokes	: 4.5
Check tolerance	
cm <sup>3</sup> /1000S.	: 7.5

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

---

GUIDE SLEEVE POSITION

Rated speed rpm	: 800
<hr/>	
Rack travel in mm	: 0.50
Tolerance mm	: ± 0.20

---

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm	: 1000
Aneroid pressure	
hPa	: 1100
Del. quantity	
cm <sup>3</sup> /1000 strokes	: 165.0
Tolerance	
cm <sup>3</sup> /1000 strokes	: ± 1.0
Check tolerance	
cm <sup>3</sup> /1000S.	: ± 3.5
Spreed	
Tolerance	
cm <sup>3</sup> /1000 strokes	: 4.0
Check tolerance	
cm <sup>3</sup> /1000S.	: 7.5

---

RATED SPEED

control lever	
position degree	: 108.0
tolerance degree	: ± 4.0
<hr/>	
rack travel mm	: 10.25
Rated speed rpm	: 1025
Tolerance 1/min	: ± 5
<hr/>	
rack travel mm	: 4.00
Rated speed rpm	: 1095
Tolerance 1/min	: ± 15
<hr/>	
rack travel mm	: 0.85
Tolerance mm	: ± 0.55
Rated speed rpm	: 1260
<hr/>	
rack travel mm	: 4.00
Rated speed rpm	: 1100

---

LOW IDLE

control lever	
position degree	: 78.0
tolerance degree	: ± 4.0
<hr/>	
Setting point w/out bumper spring	

Rated speed rpm	: 400
rack travel mm	: 3.90

Testing:

Rated speed rpm	: 400
rack travel mm	: 4.40
Tolerance mm	: ± 0.10
<hr/>	
rack travel mm	: 2.00
Rated speed rpm	: 450
Tolerance 1/min	: ± 30

---

TORQUE CONTROL

Rated speed rpm	: 1000
rack travel mm	: 11.25
Tolerance mm	: ± 0.05
<hr/>	
Rated speed rpm	: 600
rack travel mm	: 11.25
Tolerance mm	: ± 0.10
<hr/>	
Rated speed rpm	: 500
rack travel mm	: 11.25

Tolerance mm : +- 0.10  
Rated speed rpm : 450  
rack travel mm : 12.20  
Tolerance mm : +- 0.10

---

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 550  
Pressure hPa : 1100  
rack travel mm : 11.25  
Tolerance mm : +- 0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 550  
rack travel mm : 9.75  
Tolerance mm : +- 0.10

Rated speed rpm : 550

Pressure hPa : 650  
rack travel mm : 11.00  
Tolerance mm : +- 0.05

Pressure hPa : 550  
rack travel mm : 10.25  
Tolerance mm : +- 0.10

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 1100  
Rated speed rpm : 600  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 186.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 5.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 550  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 152.5  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 3.5

---

BREAKAWAY

Rack travel in mm : 10.25  
Rated speed rpm : 1025  
Tolerance 1/min : +- 5

---

STARTING FUEL DELIVERY

Rated speed rpm : 100  
rack travel mm : 20.50  
Tolerance mm : +- 0.50  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 145.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 10.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 14.0

---

LOW IDLE

Rated speed rpm : 400  
rack travel mm : 4.40  
Tolerance mm : +- 0.10  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 36.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 5.5  
Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 4.5  
Check tolerance  
cm<sup>3</sup>/1000S. : 7.5

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 21.07.95  
Test oil : ISO 4113  
Combination No. : 0 402 076 748B  
Injection pump  
Pump designation : PES6P110A720RS3305  
: -1  
EP type number : 0 412 016 742  
Governor  
Governor design. : RSV300...1100P1A555  
Governor no. : 0 421 833 379  
Cust. part No. : 9273570

Customer-spec. information  
Customer : LIEBHERR  
Motor : D 926 TI  
Power KW : 200.0

TEST BENCH REQUIREMENTS

Inlet line : 4.1  
Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0  
Overflow valve : 1 417 413 025  
Inlet press. bar : 1.5  
Tolerance bar : ± 0.1  
Test nozzle holde  
assembly : 0 681 343 009  
Opening pressure  
bar : 173.5  
Tolerance bar : ± 1.5  
Test lines : 1 680 750 089

Outside diameter : 8.0  
x inside diameter : 3.0  
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0  
Prestroke mm : 3.20  
Tolerance mm : ± 0.05  
test only : ± 0.10  
Rack travel in mm : 10.50  
Tolerance mm : ± 1.50  
Firing order : 1- 5- 3- 6- 2-  
: 4  
Phasing : 0-60-120-180-240  
: -300  
Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.50  
Start of delivery mark  
Barrel no. : 1

BASIC SETTING

Rated speed rpm : 900  
Rack travel in mm : 11.35  
Tolerance mm : ± 0.05  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 179.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0

Check tolerance  
 cm<sup>3</sup>/1000S. : + 3.5  


---

 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 4.0  


---

 Check tolerance  
 cm<sup>3</sup>/1000S. : 7.5  
 Rated speed rpm : 400  
 Rack travel in mm : 4.40  
 Tolerance mm : + 0.30  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 13.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : + 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : + 5.5  
 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 4.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 7.5

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

GUIDE SLEEVE POSITION

Rated speed rpm : 800  
 Rack travel in mm : 0.50  
 Tolerance mm : + 0.20

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 900  
 Aneroid pressure  
 hPa : -  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 179.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : + 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : + 3.5  
 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 4.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 7.5

RATED SPEED

control lever  
 position degree : 100.0  
 tolerance degree : + 4.0  
 rack travel mm : 10.30  
 Rated speed rpm : 925  
 Tolerance 1/min : + 5  
 rack travel mm : 4.00  
 Rated speed rpm : 975  
 Tolerance 1/min : + 15  
 rack travel mm : 0.85  
 Tolerance mm : + 0.55  
 Rated speed rpm : 1125  
 rack travel mm : 4.00  
 Rated speed rpm : 995

LOW IDLE

control lever  
 position degree : 74.0  
 tolerance degree : + 4.0

Setting point w/out bumper spring

Rated speed rpm : 400  
 rack travel mm : 3.90

Testing:

Rated speed rpm : 400  
 rack travel mm : 4.40  
 Tolerance mm : + 0.10

rack travel mm : 2.00  
 Rated speed rpm : 450  
 Tolerance 1/min : + 30

TORQUE CONTROL

Rated speed rpm : 900  
 rack travel mm : 11.35  
 Tolerance mm : + 0.05

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 550  
 Pressure hPa : 1300  
 rack travel mm : 11.35

Tolerance mm : ± 0.05

MEASUREMENT

Pressure hPa : 650  
Rated speed rpm : 550  
rack travel mm : 10.25  
Tolerance mm : ± 0.10

Rated speed rpm : 550

Pressure hPa : 640  
rack travel mm : 11.00  
Tolerance mm : ± 0.05

Pressure hPa : 560  
rack travel mm : 10.55  
Tolerance mm : ± 0.10

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : -  
Rated speed rpm : 550  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 165.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 3.5

---

BREAKAWAY

Rack travel in mm : 10.30  
Rated speed rpm : 925  
Tolerance 1/min : ± 5

---

STARTING FUEL DELIVERY

Rated speed rpm : 100  
rack travel mm : 20.50  
Tolerance mm : ± 0.50  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 145.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 10.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 14.0

---

LOW IDLE

Rated speed rpm : 400  
rack travel mm : 4.40  
Tolerance mm : ± 0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 5.5  
Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 4.5  
Check tolerance  
cm<sup>3</sup>/1000S. : 7.5

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 21.07.95  
Test oil : ISO 4113  
Combination No. : 0 402 076 748C  
Injection pump  
Pump designation : PES6P110A720RS3305  
: -1  
EP type number : 0 412 016 742  
Governor  
Governor design. : RSV300...1100P1A555  
Governor no. : 0 421 833 379

Cust. part No. : 9275362

---

Customer-spec. information  
Customer : LIEBHERR  
Motor : D 926 TI  
Power KW : 220.0

---

TEST BENCH REQUIREMENTS

Inlet line : 4.1  
Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0  
Overflow valve : 1 417 413 025  
Inlet press. bar : 1.5  
Tolerance bar : ± 0.1  
Overflow quantity  
min. l/h : 160  
Tolerance l/h : ± 10.0  
Test nozzle holde  
assembly : 0 681 343 009  
Opening pressure  
bar : 173.5  
Tolerance bar : ± 1.5

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Test Lines : 1 680 750 089  
Outside diameter : 8.0  
x inside diameter : 3.0  
x length mm : 600

---

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

---

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0  
Prestroke mm : 3.20  
Tolerance mm : ± 0.05  
test only : ± 0.10  
Rack travel in mm : 10.50  
Tolerance mm : ± 1.50  
Firing order : 1- 5- 3- 6- 2-  
: 4  
Phasing : 0-60-120-180-240  
: -300  
Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.50

Start of delivery mark

Barrel no. : 1

---

BASIC SETTING

Rated speed rpm : 900  
Rack travel in mm : 11.85  
Tolerance mm : ± 0.05  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 200.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : + 3.5

Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 4.0

Check tolerance  
cm<sup>3</sup>/1000S. : 7.5

Rated speed rpm : 400

Rack travel in mm : 4.40  
Tolerance mm : + 0.30

Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : + 3.0

Check tolerance  
cm<sup>3</sup>/1000S. : + 5.5

Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 4.5  
Check tolerance  
cm<sup>3</sup>/1000S. : 7.5

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

GUIDE SLEEVE POSITION

Rated speed rpm : 800

Rack travel in mm : 0.50  
Tolerance mm : + 0.20

FULL LOAD DELIVERY AT FULL LOAD STOP

Aneroid pressure  
hPa : -

Del. quantity  
cm<sup>3</sup>/1000 strokes : 200.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : + 3.5

Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 4.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 7.5

RATED SPEED

control lever  
position degree : 109.0  
tolerance degree : + 4.0

rack travel mm : 10.85  
Rated speed rpm : 925  
Tolerance 1/min : + 5

rack travel mm : 4.00  
Rated speed rpm : 975  
Tolerance 1/min : + 15

rack travel mm : 0.85  
Tolerance mm : + 0.55  
Rated speed rpm : 1125

rack travel mm : 4.00  
Rated speed rpm : 995

LOW IDLE

control lever  
position degree : 78.0  
tolerance degree : + 4.0

Setting point w/out bumper spring

Rated speed rpm : 400  
rack travel mm : 3.90

Testing:

Rated speed rpm : 400  
rack travel mm : 4.40  
Tolerance mm : + 0.10

rack travel mm : 2.00  
Rated speed rpm : 510  
Tolerance 1/min : + 30

TORQUE CONTROL

Rated speed rpm : 900  
rack travel mm : 11.85  
Tolerance mm : + 0.05

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING



Rated speed rpm : 550  
Pressure hPa : 1300  
rack travel mm : 11.85  
Tolerance mm :  $\pm$  0.05

#### MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 550  
rack travel mm : 9.65  
Tolerance mm :  $\pm$  0.10

Rated speed rpm : 550

Pressure hPa : 800  
rack travel mm : 11.25  
Tolerance mm :  $\pm$  0.05

Pressure hPa : 670  
rack travel mm : 10.25  
Tolerance mm :  $\pm$  0.10

---

#### FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : -  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 145.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  1.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  3.5

---

#### BREAKAWAY

Rack travel in mm : 10.85  
Rated speed rpm : 925  
Tolerance 1/min :  $\pm$  5

---

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
rack travel mm : 20.50  
Tolerance mm :  $\pm$  0.50  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 145.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  10.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  14.0

---

#### LOW IDLE

Rated speed rpm : 400  
rack travel mm : 4.40  
Tolerance mm :  $\pm$  0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  3.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  5.5  
Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 4.5  
Check tolerance  
cm<sup>3</sup>/1000S. : 7.5

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 21.07.95  
Test oil : ISO 4113  
  
Combination No. : 0 402 076 748E  
  
Injection pump  
Pump designation : PES6P110A720RS3305  
: -1  
EP type number : 0 412 016 742  
  
Governor  
Governor design. : RSV300...1100P1A555  
Governor no. : 0 421 833 379  
  
Cust. part No. : 9277045

Customer-spec. information  
Customer : LIEBHERR  
Motor : D 926 TI  
Power KW : 185.0

TEST BENCH REQUIREMENTS

Inlet line : 4.1  
  
Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0  
  
Overflow valve : 1 417 413 025  
  
Inlet press. bar : 1.5  
Tolerance bar : ± 0.1  
  
Overflow quantity  
min. l/h : 160  
Tolerance l/h : ± 10.0  
  
Test nozzle holde  
assembly : 0 681 343 009  
  
Opening pressure  
bar : 173.5  
Tolerance bar : ± 1.5

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Test lines : 1 680 750 089  
Outside diameter : 8.0  
x inside diameter : 3.0  
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0  
  
Prestroke mm : 3.20  
Tolerance mm : ± 0.05  
  
test only : ± 0.10  
  
Rack travel in mm : 10.50  
Tolerance mm : ± 1.50  
  
Firing order : 1- 5- 3- 6- 2-  
: 4  
  
Phasing : 0-60-120-180-240  
: -300  
Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.50  
  
Start of delivery mark  
  
Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1000  
  
Rack travel in mm : 10.75  
Tolerance mm : ± 0.05  
  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 162.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 1.0

---

Check tolerance  
cm<sup>3</sup>/1000S. : + 3.5

---

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 4.0

---

Check tolerance  
cm<sup>3</sup>/1000S. : 7.5

Rated speed rpm : 400

Rack travel in mm : 4.40

Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 3.0

Check tolerance  
cm<sup>3</sup>/1000S. : + 5.5

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 4.5

Check tolerance  
cm<sup>3</sup>/1000S. : 7.5

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

---

GUIDE SLEEVE POSITION

Rated speed rpm : 800

Rack travel in mm : 0.50

Tolerance mm : + 0.20

---

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1000

Aneroid pressure  
hPa : -

Del. quantity  
cm<sup>3</sup>/1000 strokes : 162.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : + 3.5

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 4.0

Check tolerance  
cm<sup>3</sup>/1000S. : 7.5

---

RATED SPEED

control lever  
position degree : 109.0  
tolerance degree : + 4.0

rack travel mm : 10.85  
Rated speed rpm : 1045  
Tolerance 1/min : + 5

rack travel mm : 4.00  
Rated speed rpm : 1100  
Tolerance 1/min : + 15

rack travel mm : 0.85  
Tolerance mm : + 0.55  
Rated speed rpm : 1130

rack travel mm : 4.00  
Rated speed rpm : 1100

---

LOW IDLE

control lever  
position degree : 78.0  
tolerance degree : + 4.0

Setting point w/out bumper spring

Rated speed rpm : 400  
rack travel mm : 3.90

Testing:

Rated speed rpm : 400  
rack travel mm : 4.40  
Tolerance mm : + 0.10

rack travel mm : 2.00  
Rated speed rpm : 450  
Tolerance 1/min : + 30

---

TORQUE CONTROL

Rated speed rpm : 1000  
rack travel mm : 10.75  
Tolerance mm : + 0.05

---

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 500  
Pressure hPa : 1300  
rack travel mm : 10.75  
Tolerance mm :  $\pm$  0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 500  
rack travel mm : 9.00  
Tolerance mm :  $\pm$  0.10

Rated speed rpm : 500

Pressure hPa : 535  
rack travel mm : 10.45  
Tolerance mm :  $\pm$  0.05

Pressure hPa : -  
rack travel mm : 9.95  
Tolerance mm :  $\pm$  0.10

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 134.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  1.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  3.5

---

BREAKAWAY

Rack travel in mm : 10.85  
Rated speed rpm : 1045  
Tolerance 1/min :  $\pm$  5

---

STARTING FUEL DELIVERY

Rated speed rpm : 100  
rack travel mm : 20.50  
Tolerance mm :  $\pm$  0.50  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 145.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  10.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  14.0

---

LOW IDLE

Rated speed rpm : 400  
rack travel mm : 4.40  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  3.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  5.5  
Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 4.5  
Check tolerance  
cm<sup>3</sup>/1000S. : 7.5

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 29.06.95  
Test oil : ISO 4113

Combination No. : 0 402 076 771

Injection pump  
Pump designation : PES6P120A720RS3340  
EP type number : 0 412 026 773

Governor  
Governor design. : RSV650...1100P8A566  
: -1  
Governor no. : 0 421 833 452

Cust. part No. :

Customer-spec. information  
Customer : FNH-GEOTECH  
Power KW : 201.0

TEST BENCH REQUIREMENTS

Inlet line : 4.2

Test oil inlet  
temp. °C : 40  
Tolerance °C : + 2.0

Overflow valve : 2 417 413 086

Inlet press. bar : 1.5

Test nozzle holde  
assembly : 1 688 901 103

Opening pressure  
bar : 208.5  
Tolerance bar : + 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter : 3.0  
x length mm : 600

REMARKS

Test hydr. locking device for starting with 800...1200 hPa air pressure.

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : + 1.0

Prestroke mm : 3.60  
Tolerance mm : + 0.05

test only : + 0.10

Rack travel in mm : 10.50  
Tolerance mm : + 1.50

Firing order : 1- 5- 3- 6- 2-  
: 4

Phasing : 0-60-120-180-240  
: -300

Tolerance : + 0.30  
Check  
tolerance °NW : + 0.75

Start of delivery blocking

Check  
tolerance °NW : + 0.25

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1100

Rack travel in mm : 11.85  
Tolerance mm : + 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 166.0

<hr/>	
Tolerance	
cm <sup>3</sup> /1000 strokes	: +- 1.0
<hr/>	
Check tolerance	
cm <sup>3</sup> /1000S.	: +- 5.0
<hr/>	
Spreed	
Tolerance	
cm <sup>3</sup> /1000 strokes	: 5.0
<hr/>	
Check tolerance	
cm <sup>3</sup> /1000S.	: 9.0
<hr/>	
Rated speed rpm	: 650
<hr/>	
Rack travel in mm	: 4.80
Tolerance mm	: +- 0.20
Del. quantity	
cm <sup>3</sup> /1000 strokes	: 23.0
Tolerance	
cm <sup>3</sup> /1000 strokes	: +- 3.0
Check tolerance	
cm <sup>3</sup> /1000S.	: +- 6.0
Spreed	
Tolerance	
cm <sup>3</sup> /1000 strokes	: 8.0
Check tolerance	
cm <sup>3</sup> /1000S.	: 12.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

GUIDE SLEEVE POSITION

Rated speed rpm	: 800
<hr/>	
Rack travel in mm	: 0.50
Tolerance mm	: +- 0.20
<hr/>	
governor spring	
pre-tension	
click setting x	: 2.75

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm	: 1100
Aneroid pressure	
hPa	: 1600
Del. quantity	
cm <sup>3</sup> /1000 strokes	: 166.0
Tolerance	
cm <sup>3</sup> /1000 strokes	: +- 1.0
Check tolerance	
cm <sup>3</sup> /1000S.	: +- 5.0
Spreed	

G23

Tolerance	
cm <sup>3</sup> /1000 strokes	: 5.0
Check tolerance	
cm <sup>3</sup> /1000S.	: 9.0

RATED SPEED

control lever	
position degree	: 104.0
tolerance degree	: +- 4.0
<hr/>	
rack travel mm	: 4.00
Rated speed rpm	: 1175

LOW IDLE

control lever	
position degree	: 80.0
tolerance degree	: +- 4.0

Setting point w/out bumper spring

Rated speed rpm	: 650
rack travel mm	: 4.30

Testing:

Rated speed rpm	: 650
rack travel mm	: 4.80
Tolerance mm	: +- 0.10

rack travel mm	: 2.00
Rated speed rpm	: 750

TORQUE CONTROL

Rated speed rpm	: 1100
rack travel mm	: 11.85
Tolerance mm	: +- 0.05

Rated speed rpm	: 900
rack travel mm	: 12.40
Tolerance mm	: +- 0.10

Rated speed rpm	: 700
rack travel mm	: 12.40
Tolerance mm	: +- 0.10

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 500  
Pressure hPa : 1600  
rack travel mm : 12.40  
Tolerance mm : ± 0.10

#### MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 500  
rack travel mm : 8.00  
Tolerance mm : ± 0.15

Rated speed rpm : 500

Pressure hPa : 1125  
rack travel mm : 12.00  
Tolerance mm : ± 0.05

---

#### FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 1600  
Rated speed rpm : 900  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 184.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 86.5  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0

---

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
rack travel mm : 20.50  
Tolerance mm : ± 0.50  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 150.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 15.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 19.0

---

#### LOW IDLE

Rated speed rpm : 650  
rack travel mm : 4.80  
Tolerance mm : ± 0.20  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 23.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 30.05.95  
Test oil : ISO 4113  
  
Combination No. : 0 402 076 776  
  
Injection pump  
Pump designation : PES6P110A720RS3305  
: -2  
EP type number : 0 412 016 750  
  
Governor  
Governor design. : RSV300...1100P1A598  
Governor no. : 0 421 833 473  
  
Cust. part No. : 9278136

Customer-spec. information  
Customer : LIEBHERR  
Motor : D 926 TI  
Power KW : 180.0

TEST BENCH REQUIREMENTS

Inlet line : 4.1  
  
Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0  
  
Overflow valve : 1 417 413 025  
  
Inlet press. bar : 1.5  
Tolerance bar : ± 0.1  
  
Overflow quantity  
min. l/h : 160  
Tolerance l/h : ± 10.0  
  
Test nozzle holde  
assembly : 0 681 343 009  
  
Opening pressure  
bar : 173.5  
Tolerance bar : ± 1.5

G25

Test lines : 1 680 750 089  
Outside diameter : 8.0  
x inside diameter : 3.0  
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0  
  
Prestroke mm : 3.20  
Tolerance mm : ± 0.05  
  
test only : ± 0.10  
  
Rack travel in mm : 10.50  
Tolerance mm : ± 1.50  
  
Firing order : 1- 5- 3- 6- 2-  
: 4  
  
Phasing : 0-60-120-180-240  
: -300  
Tolerance : ± 0.30  
Check  
tolerance \*NW : ± 0.50  
  
Start of delivery mark  
  
Barrel no. : 1

BASIC SETTING

Rated speed rpm : 900  
  
Rack travel in mm : 10.30  
Tolerance mm : ± 0.05  
  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 156.0



Tolerance  
 cm3/1000 strokes : + 1.0

---

Check tolerance  
 cm3/1000S. : + 3.5

---

Spreed  
 Tolerance  
 cm3/1000 strokes : 4.0

---

Check tolerance  
 cm3/1000S. : 7.5

Rated speed rpm : 400

Rack travel in mm : 4.80  
 Tolerance mm : + 0.10

Del. quantity  
 cm3/1000 strokes : 13.0  
 Tolerance  
 cm3/1000 strokes : + 3.0  
 Check tolerance  
 cm3/1000S. : + 5.5

Spreed  
 Tolerance  
 cm3/1000 strokes : 4.5  
 Check tolerance  
 cm3/1000S. : 7.5

(B) SETTING OF INJECTION PUMP  
 WITH GOVERNOR

GUIDE SLEEVE POSITION

Rated speed rpm : 800

Rack travel in mm : 0.50  
 Tolerance mm : + 0.20

governor spring  
 pre-tension  
 click setting x : 4.00

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 900  
 Aneroid pressure  
 hPa : -

Del. quantity  
 cm3/1000 strokes : 156.0  
 Tolerance  
 cm3/1000 strokes : + 1.0  
 Check tolerance  
 cm3/1000S. : + 3.5

Spreed

Tolerance  
 cm3/1000 strokes : 4.0  
 Check tolerance  
 cm3/1000S. : 7.5

RATED SPEED

control lever  
 position degree : 97.0  
 tolerance degree : + 4.0

rack travel mm : 9.30  
 Rated speed rpm : 940  
 Tolerance 1/min : + 5

rack travel mm : 4.00  
 Rated speed rpm : 975  
 Tolerance 1/min : + 15

rack travel mm : 0.85  
 Tolerance mm : + 0.55  
 Rated speed rpm : 1150

rack travel mm : 4.00  
 Rated speed rpm : 985

LOW IDLE

control lever  
 position degree : 72.0  
 tolerance degree : + 4.0

Setting point w/out bumper spring

Rated speed rpm : 400  
 rack travel mm : 4.30

Testing:

Rated speed rpm : 400  
 rack travel mm : 4.80  
 Tolerance mm : + 0.10

rack travel mm : 2.00  
 Rated speed rpm : 500  
 Tolerance 1/min : + 30

TORQUE CONTROL

Rated speed rpm : 900  
 rack travel mm : 10.30  
 Tolerance mm : + 0.05

Rated speed rpm : 700  
 rack travel mm : 10.30

Tolerance mm :  $\pm$  0.10  
Rated speed rpm : 500  
rack travel mm : 10.30  
Tolerance mm :  $\pm$  0.10

Check tolerance : 7.5  
cm<sup>3</sup>/1000S.

---

#### FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 154.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  3.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  6.0

---

#### BREAKAWAY

Rack travel in mm : 9.30  
Rated speed rpm : 940  
Tolerance 1/min :  $\pm$  5

---

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
rack travel mm : 20.50  
Tolerance mm :  $\pm$  0.50  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 145.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  15.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  19.0

---

#### LOW IDLE

Rated speed rpm : 400  
rack travel mm : 4.80  
Tolerance mm :  $\pm$  0.10  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  3.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  5.5  
Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 4.5

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 30.05.95  
Test oil : ISO 4113  
  
Combination No. : 0 402 076 776A  
  
Injection pump  
Pump designation : PES6P110A720RS3305  
                  : -2  
EP type number : 0 412 016 750  
  
Governor  
Governor design. : RSV300...1100P1A598  
Governor no. : 0 421 833 473  
  
Cust. part No. : 9278136

Customer-spec. information  
Customer : LIEBHERR  
Motor : D 926 TI  
Power KW : 180.0

TEST BENCH REQUIREMENTS

Inlet line : 4.1  
  
Test oil inlet  
temp. °C : 40  
Tolerance °C : + 2.0  
  
Overflow valve : 1 417 413 025  
  
Inlet press. bar : 1.5  
Tolerance bar : + 0.1  
  
Overflow quantity  
min. l/h : 160  
Tolerance l/h : + 10.0  
  
Test nozzle holde  
assembly : 0 681 343 009  
  
Opening pressure  
bar : 173.5  
Tolerance bar : + 1.5

Test Lines : 1 680 750 089  
Outside diameter : 8.0  
x inside diameter : 3.0  
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : + 1.0  
  
Prestroke mm : 3.20  
Tolerance mm : + 0.05  
  
test only : + 0.10  
  
Rack travel in mm : 10.50  
Tolerance mm : + 1.50  
  
Firing order : 1- 5- 3- 6- 2-  
                  : 4  
  
Phasing : 0-60-120-180-240  
          : -300  
Tolerance : + 0.30  
Check  
tolerance °NW : + 0.50

Start of delivery mark

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 900  
  
Rack travel in mm : 10.30  
Tolerance mm : + 0.05  
  
Del. quantity  
cm3/1000 strokes : 156.0

Tolerance  
cm<sup>3</sup>/1000 strokes : +- 1.0

---

Check tolerance  
cm<sup>3</sup>/1000S. : +- 3.5

---

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 4.0

---

Check tolerance  
cm<sup>3</sup>/1000S. : 7.5

Rated speed rpm : 400

Rack travel in mm : 4.80  
Tolerance mm : +- 0.10

Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.0

Tolerance  
cm<sup>3</sup>/1000 strokes : +- 3.0

Check tolerance  
cm<sup>3</sup>/1000S. : +- 5.5

Spread  
Tolerance

cm<sup>3</sup>/1000 strokes : 4.5

Check tolerance  
cm<sup>3</sup>/1000S. : 7.5

#### (B) SETTING OF INJECTION PUMP WITH GOVERNOR

---

#### GUIDE SLEEVE POSITION

governor spring  
pre-tension  
click setting x : 4.00

---

#### FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 900  
Aneroid pressure  
hPa : -  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 156.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 3.5  
Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 4.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 7.5

---

#### RATED SPEED

rack travel mm : 9.30  
Rated speed rpm : 940  
Tolerance 1/min : +- 5

rack travel mm : 0.85  
Tolerance mm : +- 0.55  
Rated speed rpm : 1150

rack travel mm : 4.00  
Rated speed rpm : 985

---

#### LOW IDLE

Setting point w/out bumper spring

Rated speed rpm : 400  
rack travel mm : 4.30

Testing:

Rated speed rpm : 400  
rack travel mm : 4.80  
Tolerance mm : +- 0.10

---

#### TORQUE CONTROL

Rated speed rpm : 900  
rack travel mm : 10.30  
Tolerance mm : +- 0.05

Rated speed rpm : 700  
rack travel mm : 10.30  
Tolerance mm : +- 0.10

Rated speed rpm : 500  
rack travel mm : 10.30  
Tolerance mm : +- 0.10

---

#### FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 154.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 6.0

---

BREAKAWAY

Rack travel in mm : 9.30  
Rated speed rpm : 940  
Tolerance 1/min : ± 5

---

STARTING FUEL DELIVERY

Rated speed rpm : 100  
rack travel mm : 20.50  
Tolerance mm : ± 0.50  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 145.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 15.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 19.0

---

LOW IDLE

Rated speed rpm : 400  
rack travel mm : 4.80  
Tolerance mm : ± 0.10  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 5.5  
Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 4.5  
Check tolerance  
cm<sup>3</sup>/1000S. : 7.5

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 27.06.95  
Test oil : ISO 4113

Combination No. : 0 402 610 804

Injection pump  
Pump designation : PE12P120A500/5RS7376  
EP type number : 0 412 620 843

Governor  
Governor design. :  
Governor no. :

Cust. part No. : 1 2277 436

Customer-spec. information

Customer : MWM  
Motor : TBD 616-V12  
Power KW : 648.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Test nozzle holde  
assembly : 1 688 901 019

Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

Test lines : 1 680 750 075

Outside diameter : 8.0

H03

x inside diameter : 3.0  
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 4.60  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 13.00  
Tolerance mm : ± 0.50

Firing order : 1- 2- 9-10- 5- 6  
: - 11- 12- 3- 4  
: - 7- 8

Phasing : 0-30-60-90-120-150  
: -180-210-240-270  
: -300-330  
Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.50

Start of delivery mark

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 750

Rack travel in mm : 12.35  
Tolerance mm : ± 0.65

Del. quantity  
cm<sup>3</sup>/1000 strokes : 285.0

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0

---

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0

---

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

Rated speed rpm : 325

Rack travel in mm : 4.20  
Tolerance mm : ± 0.20

Del. quantity  
cm<sup>3</sup>/1000 strokes : 30.0

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0

Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0

Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

---

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 750

Aneroid pressure  
hPa : -

Del. quantity  
cm<sup>3</sup>/1000 strokes : 285.0

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

---

TORQUE CONTROL

Rated speed rpm : 750

rack travel mm : 12.35

Tolerance mm : ± 0.05

---

LOW IDLE

Rated speed rpm : 325

rack travel mm : 4.20

Tolerance mm : ± 0.20

Del. quantity

cm<sup>3</sup>/1000 strokes : 30.0

Tolerance

cm<sup>3</sup>/1000 strokes : ± 3.0

Check tolerance

cm<sup>3</sup>/1000S. : ± 6.0

Spread

Tolerance

cm<sup>3</sup>/1000 strokes : 8.0

Check tolerance

cm<sup>3</sup>/1000S. : 12.0

---

End of test specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 27.06.95  
Test oil : ISO 4113

Combination No. : 0 402 618 806

Injection pump  
Pump designation : PE8P120A500/5RS7377  
EP type number : 0 412 628 904

Governor  
Governor design. :  
Governor no. :

Cust. part No. : 1 2277 429

Customer-spec. information  
Customer : MWM  
Motor : TBD 616-V16  
Power KW : 864.0

## TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Test nozzle holder  
assembly : 1 688 901 019

Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

Test lines : 1 680 750 075

Outside diameter : 8.0

H05

x inside diameter : 3.0  
x length mm : 1000

## REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 4.60  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 13.00  
Tolerance mm : ± 0.50

Firing order : 1- 2- 7- 8- 3- 4-  
: 5- 6

Phasing : 0-30-45-75-90-120  
: -315-345

Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.50

Start of delivery mark

Barrel no. : 1

## BASIC SETTING

Rated speed rpm : 750

Rack travel in mm : 12.35  
Tolerance mm : ± 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 285.0

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0



---

Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 6.0

---

Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0

Rated speed rpm : 325

Rack travel in mm : 4.20  
 Tolerance mm : ± 0.20  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 30.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : ± 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : ± 6.0  
 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 6.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 10.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

---

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 750  
 Aneroid pressure  
 hPa : -  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 285.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : ± 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : ± 4.0  
 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 6.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0

---

TORQUE CONTROL

Rated speed rpm : 750  
 rack travel mm : 12.35  
 Tolerance mm : ± 0.05

---

LOW IDLE

Rated speed rpm : 325  
 rack travel mm : 4.20  
 Tolerance mm : ± 0.20  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 30.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : ± 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : ± 6.0  
 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 6.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 10.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition : 14.07.95
Test oil : ISO 4113
Combination No. : 0 402 618 807
Injection pump
Pump designation : PE8P120A500/5RS7378
EP type number : 0 412 628 905

Governor
Governor design. :
Governor no. :

Cust. part No. : 1 2277 428

Customer-spec. information
Customer : MWM
Motor : TBD 616-V16
Power KW : 864.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1
Test oil inlet temp. °C : 40
Tolerance °C : ± 2.0
Overflow valve : 1 417 413 025
Inlet press. bar : 1.5
Tolerance bar : ± 0.1
Test nozzle holder assembly : 1 688 901 019
Opening pressure bar : 208.5
Tolerance bar : ± 1.5
Test lines : 1 680 750 075
Outside diameter : 8.0

H07

x inside diameter : 3.0
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : ± 1.0
Prestroke mm : 4.60
Tolerance mm : ± 0.05
test only : ± 0.10
Rack travel in mm : 13.00
Tolerance mm : ± 0.50
Firing order : 1- 2- 5- 6- 3- 4
: - 7- 8
Phasing : 0-30-45-75-270-300
: -315-345
Tolerance : ± 0.30
Check tolerance °NW : ± 0.50
Start of delivery mark
Barrel no. : 1

BASIC SETTING

Rated speed rpm : 750
Rack travel in mm : 12.35
Tolerance mm : ± 0.05
Del. quantity cm3/1000 strokes : 285.0
Tolerance cm3/1000 strokes : ± 1.0
Check tolerance cm3/1000s. : ± 4.0

---

Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 6.0

---

Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0

Rated speed rpm : 325

Rack travel in mm : 4.20  
 Tolerance mm : + 0.20  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 30.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : + 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : + 6.0  
 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 6.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 10.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

---

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 750  
 Aneroid pressure  
 hPa : -  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 285.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : + 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : + 4.0  
 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 6.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0

---

TORQUE CONTROL

Rated speed rpm : 750  
 rack travel mm : 12.35  
 Tolerance mm : + 0.05

---

LOW IDLE

Rated speed rpm : 325  
 rack travel mm : 4.20  
 Tolerance mm : + 0.20  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 30.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : + 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : + 6.0  
 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 6.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 10.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 14.07.95  
Test oil : ISO 4113  
Combination No. : 0 402 618 808  
Injection pump  
Pump designation : PE8P120A500/5RS7383  
EP type number : 0 412 628 908

Governor  
Governor design. :  
Governor no. :

Cust. part No. : 1 2277 444

Customer-spec. information  
Customer : MWM  
Motor : TBD 616  
Power KW : 432.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1  
Test oil inlet  
temp. °C : 40  
Tolerance °C : + 2.0  
Overflow valve : 1 417 413 025

Inlet press. bar : 1.5  
Tolerance bar : + 0.1

Test nozzle holde  
assembly : 1 688 901 019

Opening pressure  
bar : 208.5  
Tolerance bar : + 1.5

Test lines : 1 680 750 075

Outside diameter : 8.0

H09

x inside diameter : 3.0  
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : + 1.0

Prestroke mm : 4.65  
Tolerance mm : + 0.05

test only : + 0.10

Rack travel in mm : 13.00  
Tolerance mm : + 0.50

Firing order : 1- 8- 5- 4- 7  
: - 2- 3- 6

Phasing : 0-30-90-120-180  
: -210-270-300

Tolerance : + 0.30  
Check  
tolerance °NW : + 0.50

Start of delivery mark

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 750

Rack travel in mm : 12.35  
Tolerance mm : + 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 285.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : + 4.0

---

Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 6.0

---

Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0

Rated speed rpm : 325

Rack travel in mm : 4.20  
 Tolerance mm : +- 0.30  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 30.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : +- 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : +- 6.0  
 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 8.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 12.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

---

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 750  
 Aneroid pressure  
 hPa : -  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 285.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : +- 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : +- 4.0  
 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 6.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0

---

TORQUE CONTROL

Rated speed rpm : 750  
 rack travel mm : 12.35  
 Tolerance mm : +- 0.05

---

LOW IDLE

Rated speed rpm : 325  
 rack travel mm : 4.20  
 Tolerance mm : +- 0.30  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 30.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : +- 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : +- 6.0  
 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 8.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 12.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 19.07.95  
Test oil : ISO 4113

Combination No. : 0 402 618 810

Injection pump  
Pump designation : PE8P120A300LS7889  
EP type number : 0 412 628 912

Governor  
Governor design. :  
Governor no. :

Cust. part No. : 04221425KZ0165-17

Customer-spec. information  
Customer : KHD  
Motor : BF8M1015/C

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Test nozzle holde  
assembly : 1 688 901 105

Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

Test lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0  
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 4.05  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 10.50  
Tolerance mm : ± 0.50

Firing order : 1- 8- 7- 2- 6  
                  : - 5- 4- 3

Phasing : 0-45-90-135-180  
          : -225-270-315

Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.50

Start of delivery mark

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 950

Rack travel in mm : 13.75  
Tolerance mm : ± 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 350.0

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0

---

Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

---

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

Rated speed rpm : 300

Rack travel in mm : 4.50  
Tolerance mm : +- 0.20

Del. quantity  
cm<sup>3</sup>/1000 strokes : 25.0

Tolerance  
cm<sup>3</sup>/1000 strokes : +- 3.0

Check tolerance  
cm<sup>3</sup>/1000S. : +- 6.0

Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0

Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

---

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 950  
Aneroid pressure  
hPa : -

Del. quantity  
cm<sup>3</sup>/1000 strokes : 350.0

Tolerance  
cm<sup>3</sup>/1000 strokes : +- 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : +- 4.0

Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

---

TORQUE CONTROL

Rated speed rpm : 950  
rack travel mm : 13.75  
Tolerance mm : +- 0.05

---

STARTING FUEL DELIVERY

Rated speed rpm : 100

rack travel mm : 21.00

Tolerance mm : +- 0.50

Del. quantity  
cm<sup>3</sup>/1000 strokes : 200.0

Tolerance  
cm<sup>3</sup>/1000 strokes : +- 20.0

Check tolerance  
cm<sup>3</sup>/1000S. : +- 24.0

---

LOW IDLE

Rated speed rpm : 300

rack travel mm : 4.50

Tolerance mm : +- 0.20

Del. quantity  
cm<sup>3</sup>/1000 strokes : 25.0

Tolerance  
cm<sup>3</sup>/1000 strokes : +- 3.0

Check tolerance  
cm<sup>3</sup>/1000S. : +- 6.0

Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0

Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 03.04.92  
Test oil : ISO 4113

Combination No. : 0 402 640 823

Injection pump  
Pump designation : PE12P120A320LS7805  
EP type number : 0 412 620 802

Governor  
Governor design. : RQV350...1050PA781  
: -1  
Governor no. : 0 421 813 890

Cust. part No. :

Customer-spec. information  
Customer : MB-NFZ  
Motor : OM 444 LA  
Power KW : 485.0

TEST BENCH REQUIREMENTS

Inlet Line : 3.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Overflow quantity  
min. l/h : 155  
Tolerance l/h : ± 5.0

Test nozzle holder  
assembly : 1 688 901 019

Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

H13

Test lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0  
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 5.25  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 10.50  
Tolerance mm : ± 1.50

Firing order : 12- 1- 5- 9- 8  
: - 3- 4- 11- 10  
: - 2- 6- 7

Phasing : 0-45-60-105-120  
: -165-180-225-240  
: -285-300-345

Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.50

Start of delivery mark

Barrel no. : 12

BASIC SETTING

Rated speed rpm : 1050

Rack travel in mm : 14.45  
Tolerance mm : ± 0.05



Del. quantity  
cm<sup>3</sup>/1000 strokes : 212.0

---

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0

---

Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0

---

Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

---

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

Rated speed rpm : 350

Rack travel in mm : 5.70  
Tolerance mm : ± 0.30

Del. quantity  
cm<sup>3</sup>/1000 strokes : 17.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0

Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 350  
guide sleeve  
travel mm : 1.55  
Tolerance mm : ± 0.25

Rated speed rpm : 1107  
guide sleeve  
travel mm : 8.05  
Tolerance mm : ± 0.25

Rated speed rpm : 454  
guide sleeve  
travel mm : 3.05  
Tolerance mm : ± 0.25

Rated speed rpm : 900  
guide sleeve  
travel mm : 5.65  
Tolerance mm : ± 0.25

Rated speed rpm : 1204

guide sleeve  
travel mm : 10.05  
Tolerance mm : ± 0.25

GUIDE SLEEVE POSITION

Rated speed rpm : 1180  
Rack travel in mm : 16.50  
Tolerance mm : ± 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1050  
Aneroid pressure  
hPa : 1100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 212.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

RATED SPEED

control lever  
position degree : 120.0  
tolerance degree : ± 4.0

rack travel mm : 13.45  
Rated speed rpm : 1095  
Tolerance 1/min : ± 5

rack travel mm : 4.00  
Rated speed rpm : 1195  
Tolerance 1/min : ± 15

rack travel mm : 0.75  
Tolerance mm : ± 0.75  
Rated speed rpm : 1300

LOW IDLE

control lever  
position degree : 68.0  
tolerance degree : ± 4.0

Testing:

Rated speed rpm : 350  
rack travel mm : 5.70  
Tolerance mm : ± 0.10

Rated speed rpm : 250  
CRT mm min. : > 7.00  
Rated speed rpm : 500

---

#### TORQUE CONTROL

Rated speed rpm : 1050  
rack travel mm : 14.45  
Tolerance mm : ± 0.05

Rated speed rpm : 600  
rack travel mm : 14.45  
Tolerance mm : ± 0.05

---

#### ANEROID/ALTITUDE COMPENSATOR TEST

#### MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 500

Pressure hPa : 350  
rack travel mm : 0.80  
Tolerance mm : ± 0.10

Pressure hPa : 500  
rack travel mm : 2.15  
Tolerance mm : ± 0.15

---

#### START CUT-OUT

Rated speed rpm : < 270  
Check  
speed 1/min : < 290

---

#### FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 1100  
Rated speed rpm : 600  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 211.5  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.5  
Spreed

Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 142.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

#### BREAKAWAY

Rack travel in mm : 13.45  
Rated speed rpm : 1095  
Tolerance 1/min : ± 5

---

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 220.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 10.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 14.0

---

#### LOW IDLE

Rated speed rpm : 350  
rack travel mm : 5.70  
Tolerance mm : ± 0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 17.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

End of test specification sheet



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 23.06.95  
Test oil : ISO 4113

Combination No. : 0 402 646 626

Injection pump  
Pump designation : PE6P120A320RS7299  
EP type number : 0 412 626 885

Governor  
Governor design. : RQV275...1000PA1076K  
Governor no. : 0 421 815 357

Cust. part No. : 1280160

Customer-spec. information

Customer : DAF  
Motor : WS 268 M  
Power KW : 268.0

TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Overflow quantity  
min. l/h : 160  
Tolerance l/h : ± 20.0

Test nozzle holder  
assembly : 1 688 901 105

Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter : 3.0  
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 4.85  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 10.50  
Tolerance mm : ± 1.50

Firing order : 1- 5- 3- 6- 2-  
: 4

Phasing : 0-60-120-180-240  
: -300

Tolerance : ± 0.30  
Check  
tolerance \*NW : ± 0.75

Start of delivery mark

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 980

Rack travel in mm : 13.55  
Tolerance mm : ± 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 250.0

Tolerance  
 cm<sup>3</sup>/1000 strokes : + 1.0  


---

 Check tolerance  
 cm<sup>3</sup>/1000S. : + 4.0  


---

 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 5.0  


---

 Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0  
  
 Rated speed rpm : 275  
  
 Rack travel in mm : 5.60  
 Tolerance mm : + 0.10  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 17.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : + 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : + 6.0  
 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 8.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 12.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 275  
 guide sleeve  
 travel mm : 2.14  
 Tolerance mm : + 0.15  
  
 Rated speed rpm : 1045  
 guide sleeve  
 travel mm : 9.82  
 Tolerance mm : + 0.20  
  
 Rated speed rpm : 689  
 guide sleeve  
 travel mm : 6.43  
 Tolerance mm : + 0.25  
  
 Rated speed rpm : 284  
 guide sleeve  
 travel mm : 2.27  
 Tolerance mm : + 0.25  
  
 Rated speed rpm : 334  
 guide sleeve  
 travel mm : 3.17  
 Tolerance mm : + 0.25

Rated speed rpm : 390  
 guide sleeve  
 travel mm : 3.79  
 Tolerance mm : + 0.25  
  
 Rated speed rpm : 1310  
 guide sleeve  
 travel mm : 13.50  
 Tolerance mm : + 0.50

GUIDE SLEEVE POSITION

Rated speed rpm : 1130  
  
 Rack travel in mm : 12.60  
 Tolerance mm : + 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 980  
 Aneroid pressure  
 hPa : -  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 250.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : + 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : + 4.0  
 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 5.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0

RATED SPEED

control lever  
 position degree : 120.0  
 tolerance degree : + 4.0  
  
 rack travel mm : 12.55  
 Rated speed rpm : 1042  
 Tolerance 1/min : + 5  
  
 rack travel mm : 4.00  
 Rated speed rpm : 1160  
 Tolerance 1/min : + 15  
  
 rack travel mm : 0.70  
 Tolerance mm : + 0.70  
 Rated speed rpm : 1275

LOW IDLE

control lever  
position degree : 76.0  
tolerance degree : ± 4.0

Testing:

Rated speed rpm : 275  
rack travel mm : 4.80  
Tolerance mm : ± 0.10

rack travel mm : 2.00  
Rated speed rpm : 390  
Tolerance 1/min : ± 20

Rated speed rpm : 175

CRT mm min. : > 7.50

---

TORQUE CONTROL

Rated speed rpm : 980  
rack travel mm : 13.55  
Tolerance mm : ± 0.05

Rated speed rpm : 750  
rack travel mm : 13.05  
Tolerance mm : ± 0.05

Rated speed rpm : 825  
rack travel mm : 13.30  
Tolerance mm : ± 0.10

Rated speed rpm : 600  
rack travel mm : 12.10  
Tolerance mm : ± 0.10

Rated speed rpm : 500  
rack travel mm : 11.70  
Tolerance mm : ± 0.10

---

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 980  
Pressure hPa : 1500  
rack travel mm : 13.55  
Tolerance mm : ± 0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 980  
rack travel mm : 8.60  
Tolerance mm : ± 0.10

Rated speed rpm : 980  
Pressure hPa : 720  
rack travel mm : 12.25  
Tolerance mm : ± 0.05

Pressure hPa : 360  
rack travel mm : 9.80  
Tolerance mm : ± 0.10

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : -  
Rated speed rpm : 750  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 263.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 5.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 600  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 154.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0

---

BREAKAWAY

Rack travel in mm : 12.55  
Rated speed rpm : 1042  
Tolerance 1/min : ± 5

---

LOW IDLE

Rated speed rpm : 275  
rack travel mm : 5.60  
Tolerance mm : ± 0.10  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 17.0

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 20.04.95  
 Test oil : ISO 4113  
 Combination No. : 0 402 646 659  
 Injection pump  
 Pump designation : PE6P120A7ZORS7283-1  
 EP type number : 0 412 626 945  
 Governor  
 Governor design. : RQV300...1100PA1061  
 : -2K  
 Governor no. : 0 421 815 465  
 Cust. part No. : 615.60.08.0304

Customer-spec. information  
 Customer : SNF  
 Motor : WD615.50  
 Power KW : 200.0

TEST BENCH REQUIREMENTS

Inlet line : 4.1  
 Test oil inlet  
 temp. °C : 40  
 Tolerance °C : ± 2.0  
 Overflow valve : 2 417 413 033  
 Inlet press. bar : 2.5  
 Tolerance bar : ± 0.1  
 Test nozzle holder  
 assembly : 1 688 901-105  
 Opening pressure  
 bar : 208.5  
 Tolerance bar : ± 1.5  
 Test lines : 1 680 750 089

Outside diameter : 8.0  
 x inside diameter : 3.0  
 x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
 Tolerance bar : ± 1.0  
 Prestroke mm : 4.45  
 Tolerance mm : ± 0.05  
 test only : ± 0.10  
 Rack travel in mm : 14.00  
 Tolerance mm : ± 0.50  
 Firing order : 1- 5- 3- 6- 2-  
 : 4  
 Phasing : 0-60-120-180-240  
 : -300  
 Tolerance : ± 0.30  
 Check  
 tolerance °NW : ± 0.75

BASIC SETTING

Rated speed rpm : 1100  
 Rack travel in mm : 13.30  
 Tolerance mm : ± 0.05  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 244.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : ± 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : ± 4.0  
 Spread



Tolerance  
 cm<sup>3</sup>/1000 strokes : 6.0

---

Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0

Rated speed rpm : 300

Rack travel in mm : 6.30  
 Tolerance mm : ± 0.30

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 27.5

Tolerance  
 cm<sup>3</sup>/1000 strokes : ± 3.0

Check tolerance  
 cm<sup>3</sup>/1000S. : ± 6.0

Speed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 8.0

Check tolerance  
 cm<sup>3</sup>/1000S. : 12.0

(B) SETTING OF INJECTION PUMP  
 WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 300  
 guide sleeve  
 travel mm : 1.64  
 Tolerance mm : ± 0.25

Rated speed rpm : 1156  
 guide sleeve  
 travel mm : 10.32  
 Tolerance mm : ± 0.25

Rated speed rpm : 817  
 guide sleeve  
 travel mm : 6.93  
 Tolerance mm : ± 0.25

Rated speed rpm : 314  
 guide sleeve  
 travel mm : 1.82  
 Tolerance mm : ± 0.25

Rated speed rpm : 364  
 guide sleeve  
 travel mm : 2.49  
 Tolerance mm : ± 0.25

Rated speed rpm : 480  
 guide sleeve  
 travel mm : 3.56  
 Tolerance mm : ± 0.25

Rated speed rpm : 1390

guide sleeve  
 travel mm : 13.50  
 Tolerance mm : ± 0.50

GUIDE SLEEVE POSITION

Rated speed rpm : 1230

Rack travel in mm : 12.30  
 Tolerance mm : ± 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1100  
 Aneroid pressure  
 hPa : 1200

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 244.0

Tolerance  
 cm<sup>3</sup>/1000 strokes : ± 1.0

Check tolerance  
 cm<sup>3</sup>/1000S. : ± 4.0

Speed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 6.0

Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0

RATED SPEED

control lever  
 position degree : 119.0  
 tolerance degree : ± 4.0

rack travel mm : 12.30  
 Rated speed rpm : 1145  
 Tolerance 1/min : ± 8

rack travel mm : 4.00  
 Rated speed rpm : 1255  
 Tolerance 1/min : ± 15

rack travel mm : 0.75  
 Tolerance mm : ± 0.75  
 Rated speed rpm : 1350

LOW IDLE

control lever  
 position degree : 75.0  
 tolerance degree : ± 4.0

Testing:

Rated speed rpm : 300  
rack travel mm : 6.30  
Tolerance mm : ± 0.10

Rated speed rpm : 200

CRT mm min. : > 8.00

Rated speed rpm : 314

---

#### TORQUE CONTROL

Rated speed rpm : 1100  
rack travel mm : 13.30  
Tolerance mm : ± 0.05

Rated speed rpm : 700  
rack travel mm : 12.15  
Tolerance mm : ± 0.10

Rated speed rpm : 900  
rack travel mm : 12.90  
Tolerance mm : ± 0.15

Rated speed rpm : 500  
rack travel mm : 12.10  
Tolerance mm : ± 0.15

---

#### ANEROID/ALTITUDE COMPENSATOR TEST

#### SETTING

Rated speed rpm : 1100  
Pressure hPa : 1200  
rack travel mm : 13.30  
Tolerance mm : ± 0.05

#### MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 1100  
rack travel mm : 11.10  
Tolerance mm : ± 0.10

Rated speed rpm : 1100

Pressure hPa : 500  
rack travel mm : 11.80  
Tolerance mm : ± 0.10

Pressure hPa : 700  
rack travel mm : 12.75  
Tolerance mm : ± 0.05

---

#### START CUT-OUT

H23

Rated speed rpm : < 220  
Check  
speed 1/min : < 240

---

#### FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 1200  
Rated speed rpm : 700  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 240.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 223.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

#### BREAKAWAY

Rack travel in mm : 12.30  
Rated speed rpm : 1145  
Tolerance 1/min : ± 8

---

#### STARTING FUEL DELIVERY

Del. quantity  
cm<sup>3</sup>/1000 strokes : 160.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 20.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 24.0

---

LOW IDLE

Rated speed rpm : 300  
rack travel mm : 6.30  
Tolerance mm : +- 0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 27.5  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 28.07.95  
Test oil : ISO 4113

Combination No. : 0 402 646 746

Injection pump  
Pump designation : PE6P120A320LS7872  
EP type number : 0 412 626 912

Governor  
Governor design. : RQV300...950PA1238  
Governor no. : 0 421 814 156

Cust. part No. : 04222809KY0165-17

Customer-spec. information

Customer : KHD  
Motor : BF6M1015C  
Power KW : 300.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Test nozzle holder  
assembly : 1 688 901 105

Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

Test lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0  
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 4.05  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 10.50  
Tolerance mm : ± 0.50

Firing order : 1- 6- 3- 5- 2-  
: 4

Phasing : 0-60-120-180-240  
: -300

Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.50

Start of delivery mark

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 900

Rack travel in mm : 14.20  
Tolerance mm : ± 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 358.0

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0

<hr/>	
Spread	
Tolerance	
cm <sup>3</sup> /1000 strokes :	6.0
<hr/>	
Check tolerance	
cm <sup>3</sup> /1000S. :	9.0
Rated speed rpm :	300
Rack travel in mm :	5.00
Tolerance mm :	+ 0.20
Del. quantity	
cm <sup>3</sup> /1000 strokes :	23.0
Tolerance	
cm <sup>3</sup> /1000 strokes :	+ 3.0
Check tolerance	
cm <sup>3</sup> /1000S. :	+ 6.0
Spread	
Tolerance	
cm <sup>3</sup> /1000 strokes :	8.0
Check tolerance	
cm <sup>3</sup> /1000S. :	12.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

---

GUIDE SLEEVE TRAVEL

Rated speed rpm :	300
guide sleeve	
travel mm :	1.13
Tolerance mm :	+ 0.20
Rated speed rpm :	994
guide sleeve	
travel mm :	10.08
Tolerance mm :	+ 0.15
Rated speed rpm :	700
guide sleeve	
travel mm :	5.10
Tolerance mm :	+ 0.25
Rated speed rpm :	1160
guide sleeve	
travel mm :	13.50
Tolerance mm :	+ 0.50

---

GUIDE SLEEVE POSITION

Rated speed rpm :	1035
Rack travel in mm :	13.20
Tolerance mm :	+ 1.30

---

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm :	900
Aneroid pressure	
hPa :	1700
Del. quantity	
cm <sup>3</sup> /1000 strokes :	358.0
Tolerance	
cm <sup>3</sup> /1000 strokes :	+ 1.0
Check tolerance	
cm <sup>3</sup> /1000S. :	+ 4.0
Spread	
Tolerance	
cm <sup>3</sup> /1000 strokes :	6.0
Check tolerance	
cm <sup>3</sup> /1000S. :	9.0

---

RATED SPEED

control lever	
position degree :	123.0
tolerance degree :	+ 4.0
rack travel mm :	13.20
Rated speed rpm :	980
Tolerance 1/min :	+ 5
rack travel mm :	4.00
Rated speed rpm :	1055
Tolerance 1/min :	+ 15
rack travel mm :	0.50
Tolerance mm :	+ 0.50
Rated speed rpm :	1200

---

LOW IDLE

control lever	
position degree :	77.0
tolerance degree :	+ 4.0

Testing:

Rated speed rpm :	300
rack travel mm :	5.00
Tolerance mm :	+ 0.10
Rated speed rpm :	200
CRT mm min. :	> 6.70
Rated speed rpm :	370

---

TORQUE CONTROL

Rated speed rpm : 900  
rack travel mm : 14.20  
Tolerance mm :  $\pm$  0.05

---

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 400  
Pressure hPa : 1700  
rack travel mm : 14.20  
Tolerance mm :  $\pm$  0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 400  
rack travel mm : 8.90  
Tolerance mm :  $\pm$  0.20

Rated speed rpm : 400

Pressure hPa : 385  
rack travel mm : 9.70  
Tolerance mm :  $\pm$  0.20

Pressure hPa : 1000  
rack travel mm : 13.00  
Tolerance mm :  $\pm$  0.05

---

START CUT-OUT

Rated speed rpm : < 220  
Check  
speed 1/min : < 240

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : -  
Rated speed rpm : 400  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 230.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  1.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  4.0  
Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0

Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

BREAKAWAY

Rack travel in mm : 13.20  
Rated speed rpm : 980  
Tolerance 1/min :  $\pm$  5

---

STARTING FUEL DELIVERY

Rated speed rpm : 100  
rack travel mm : 8.90  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 230.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  20.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  24.0

---

LOW IDLE

Rated speed rpm : 300  
rack travel mm : 5.00  
Tolerance mm :  $\pm$  0.20  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 23.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  3.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  6.0  
Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 01.06.95  
Test oil : ISO 4113

Combination No. : 0 402 646 747

Injection pump  
Pump designation : PE6P120A320LS7834  
: -10

EP type number : 0 412 626 853

Governor  
Governor design. : RQV300...1050PA1033  
: -22

Governor no. : 0 421 814 146

Cust. part No. : 0260744302

Customer-spec. information  
Customer : MB-NFZ  
Motor : OM441 LA  
Power KW : 230.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Overflow quantity  
min. L/h : 140  
Tolerance L/h : ± 10.0

Test nozzle holder  
assembly : 1 688 901 105

Opening pressure  
bar : 208.5

H28

Tolerance bar : ± 1.5

Test lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0  
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 5.25  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 20.50  
Tolerance mm : ± 0.50

Firing order : 6- 3- 5- 2- 4-  
: 1-

Phasing : 0-60-120-180-240  
: -300-360

Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.75

Start of delivery mark

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 550

Rack travel in mm : 14.80  
Tolerance mm : ± 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 230.0

<hr/>	
Tolerance	
cm <sup>3</sup> /1000 strokes	: + 1.0
<hr/>	
Check tolerance	
cm <sup>3</sup> /1000S.	: + 4.0
<hr/>	
Spread	
Tolerance	
cm <sup>3</sup> /1000 strokes	: 5.0
<hr/>	
Check tolerance	
cm <sup>3</sup> /1000S.	: 9.0
<hr/>	
Rated speed rpm	: 300
<hr/>	
Rack travel in mm	: 6.30
Tolerance mm	: + 0.30
Del. quantity	
cm <sup>3</sup> /1000 strokes	: 13.0
Tolerance	
cm <sup>3</sup> /1000 strokes	: + 3.0
Check tolerance	
cm <sup>3</sup> /1000S.	: + 6.0
Spread	
Tolerance	
cm <sup>3</sup> /1000 strokes	: 6.0
Check tolerance	
cm <sup>3</sup> /1000S.	: 10.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

---

GUIDE SLEEVE TRAVEL

Rated speed rpm	: 300
guide sleeve	
travel mm	: 1.29
Tolerance mm	: + 0.20
<hr/>	
Rated speed rpm	: 1108
guide sleeve	
travel mm	: 8.53
Tolerance mm	: + 0.15
<hr/>	
Rated speed rpm	: 558
guide sleeve	
travel mm	: 4.53
Tolerance mm	: + 0.25
<hr/>	
Rated speed rpm	: 608
guide sleeve	
travel mm	: 5.03
Tolerance mm	: + 0.25
<hr/>	
Rated speed rpm	: 820
guide sleeve	
travel mm	: 6.13

J01

Tolerance mm	: + 0.25
<hr/>	
Rated speed rpm	: 1183
guide sleeve	
travel mm	: 10.00
Tolerance mm	: + 0.25
<hr/>	
Rated speed rpm	: 1280
guide sleeve	
travel mm	: 11.50
Tolerance mm	: + 0.50

---

GUIDE SLEEVE POSITION

Rated speed rpm	: 1145
<hr/>	
Rack travel in mm	: 13.80
Tolerance mm	: + 1.30

---

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm	: 550
Aneroid pressure	
hPa	: 1000
Del. quantity	
cm <sup>3</sup> /1000 strokes	: 230.0
Tolerance	
cm <sup>3</sup> /1000 strokes	: + 1.0
Check tolerance	
cm <sup>3</sup> /1000S.	: + 4.0
Spread	
Tolerance	
cm <sup>3</sup> /1000 strokes	: 5.0
Check tolerance	
cm <sup>3</sup> /1000S.	: 9.0

---

RATED SPEED

control lever	
position degree	: 121.0
tolerance degree	: + 4.0
<hr/>	
rack travel mm	: 13.80
Rated speed rpm	: 1095
Tolerance 1/min	: + 5
<hr/>	
rack travel mm	: 4.00
Rated speed rpm	: 1190
Tolerance 1/min	: + 15
<hr/>	
rack travel mm	: 0.75
Tolerance mm	: + 0.75
Rated speed rpm	: 1300

---

LOW IDLE



control lever  
position degree : 66.0  
tolerance degree : ± 4.0

Testing:

Rated speed rpm : 300  
rack travel mm : 5.20  
Tolerance mm : ± 0.10

Rated speed rpm : 200  
CRT mm min. : > 7.00

Rated speed rpm : 350

---

TORQUE CONTROL

Rated speed rpm : 550  
rack travel mm : 14.80  
Tolerance mm : ± 0.05

Rated speed rpm : 1050  
rack travel mm : 14.80  
Tolerance mm : ± 0.10

---

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 400  
Pressure hPa : 1000  
rack travel mm : 14.80  
Tolerance mm : ± 0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 400  
rack travel mm : 10.90  
Tolerance mm : ± 0.20

Rated speed rpm : 400

Pressure hPa : 400  
rack travel mm : 13.25  
Tolerance mm : ± 0.20

Pressure hPa : 500  
rack travel mm : 14.10  
Tolerance mm : ± 0.20

---

START CUT-OUT

J02

Rated speed rpm : < 220  
Check  
speed 1/min : < 240

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 1000  
Rated speed rpm : 1050  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 228.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 138.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

BREAKAWAY

Rack travel in mm : 13.80  
Rated speed rpm : 1095  
Tolerance 1/min : ± 5

---

STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 210.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 15.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 19.0

---

LOW IDLE

Rated speed rpm : 300  
rack travel mm : 6.30  
Tolerance mm :  $\pm$  0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  3.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

---

End of test specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 01.06.95  
Test oil : ISO 4113  
Combination No. : 0 402 646 748  
Injection pump  
Pump designation : PE6P120A320LS7834  
: -10  
EP type number : 0 412 626 853  
Governor  
Governor design. : RQ300/1050PA1030-27  
Governor no. : 0 421 801 777  
Cust. part No. : 0260744202

---

Customer-spec. information  
Customer : MB-NFZ  
Motor : OM441 LA  
Power KW : 230.0

---

## TEST BENCH REQUIREMENTS

Inlet line : 3.1  
Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0  
Overflow valve : 1 417 413 047  
Inlet press. bar : 1.5  
Tolerance bar : ± 0.1  
Overflow quantity  
min. L/h : 140  
Tolerance L/h : ± 10.0  
Test nozzle holde  
assembly : 1 688 901 105  
Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

J04

Test lines : 1 680 750 075  
Outside diameter : 8.0  
x inside diameter : 3.0  
x length mm : 1000

---

## REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

---

## BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0  
Prestroke mm : 5.25  
Tolerance mm : ± 0.05  
test only : ± 0.10  
Rack travel in mm : 20.50  
Tolerance mm : ± 0.50  
Firing order : 6- 3- 5- 2- 4-  
: 1-  
Phasing : 0-60-120-180-240  
: -300-360  
Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.50

## Start of delivery mark

Barrel no. : 6

---

## BASIC SETTING

Rated speed rpm : 550  
Rack travel in mm : 14.80  
Tolerance mm : ± 0.05  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 230.0

---

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0

Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

Rated speed rpm : 300

Rack travel in mm : 6.30  
Tolerance mm : ± 0.30

Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.0

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0

Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 300  
guide sleeve  
travel mm : 1.78  
Tolerance mm : ± 0.10

Rated speed rpm : 1104  
guide sleeve  
travel mm : 6.51  
Tolerance mm : ± 0.10

Rated speed rpm : 1050  
guide sleeve  
travel mm : 6.00  
Tolerance mm : ± 0.10

Rated speed rpm : 421  
guide sleeve  
travel mm : 4.00  
Tolerance mm : ± 0.10

Rated speed rpm : 550  
guide sleeve  
travel mm : 6.00  
Tolerance mm : ± 0.10

Rated speed rpm : 1270  
guide sleeve  
travel mm : 11.50  
Tolerance mm : ± 0.50

GUIDE SLEEVE POSITION

Rated speed rpm : 600  
Rack travel in mm : 20.00  
Tolerance mm : ± 0.80

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 550  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 230.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

RATED SPEED

control lever  
position degree : 99.0  
tolerance degree : ± 4.0

rack travel mm : 13.80  
Rated speed rpm : 1098  
Tolerance 1/min : ± 8

rack travel mm : 4.00  
Rated speed rpm : 1200  
Tolerance 1/min : ± 15

rack travel mm : 0.75  
Tolerance mm : ± 0.75  
Rated speed rpm : 1300

LOW IDLE

control lever  
position degree : 72.0  
tolerance degree : ± 4.0

Testing:

Rated speed rpm : 300  
 rack travel mm : 5.20  
 Tolerance mm : + 0.10

rack travel mm : 2.00  
 Rated speed rpm : 405  
 Tolerance 1/min : + 20

Rated speed rpm : 200

CRT mm min. : > 6.80

TORQUE CONTROL

Rated speed rpm : 550  
 rack travel mm : 14.80  
 Tolerance mm : + 0.05

Rated speed rpm : 1050  
 rack travel mm : 14.80  
 Tolerance mm : + 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 400  
 Pressure hPa : 1000  
 rack travel mm : 14.80  
 Tolerance mm : + 0.05

MEASUREMENT

Pressure hPa : -  
 Rated speed rpm : 400  
 rack travel mm : 10.90  
 Tolerance mm : + 0.20

Rated speed rpm : 400

Pressure hPa : 400  
 rack travel mm : 13.25  
 Tolerance mm : + 0.20

Pressure hPa : 500  
 rack travel mm : 14.10  
 Tolerance mm : + 0.20

START CUT-OUT

Rated speed rpm : < 220  
 Check speed 1/min : < 240

J06

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
 hPa : 1000  
 Rated speed rpm : 1050  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 228.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : + 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : + 6.0  
 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 8.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure  
 hPa : -  
 Rated speed rpm : 500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 138.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : + 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : + 4.0  
 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 8.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 12.0

BREAKAWAY

Rack travel in mm : 13.80  
 Rated speed rpm : 1098  
 Tolerance 1/min : + 8

STARTING FUEL DELIVERY

Rated speed rpm : 100  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 210.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : + 15.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : + 19.0

LOW IDLE

Rated speed rpm : 300

rack travel mm : 6.30  
Tolerance mm :  $\pm$  0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  3.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 02.06.95  
Test oil : ISO 4113

Combination No. : 0 402 646 749

Injection pump  
Pump designation : PE6P120A320LS7837  
: -10  
EP type number : 0 412 626 855

Governor  
Governor design. : RQ300/1050PA993-13  
Governor no. : 0 421 801 779

Cust. part No. : 0260744002

Customer-spec. information  
Customer : MB-NFZ  
Motor : OM441 LA  
Power KW : 250.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Tolerance l/h : ± 10.0

Test nozzle holde  
assembly : 1 688 901 105

Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

Test lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0  
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 5.25  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 20.50  
Tolerance mm : ± 0.50

Firing order : 6- 3- 5- 2- 4-  
: 1-

Phasing : 0-60-120-180-240  
: -300-360  
Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.75

Start of delivery mark

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 550

Rack travel in mm : 15.10  
Tolerance mm : ± 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 252.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : + 4.0

Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

Rated speed rpm : 300

Rack travel in mm : 6.20  
Tolerance mm : + 0.30

Del. quantity  
cm<sup>3</sup>/1000 strokes : 19.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 3.0

Check tolerance  
cm<sup>3</sup>/1000S. : + 6.0

Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0

Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 300  
guide sleeve  
travel mm : 1.85  
Tolerance mm : + 0.10

Rated speed rpm : 1104  
guide sleeve  
travel mm : 6.34  
Tolerance mm : + 0.10

Rated speed rpm : 1050  
guide sleeve  
travel mm : 6.00  
Tolerance mm : + 0.10

Rated speed rpm : 413  
guide sleeve  
travel mm : 4.55  
Tolerance mm : + 0.10

Rated speed rpm : 510  
guide sleeve  
travel mm : 6.00  
Tolerance mm : + 0.10

Rated speed rpm : 1280  
guide sleeve  
travel mm : 11.50  
Tolerance mm : + 0.50

GUIDE SLEEVE POSITION

Rated speed rpm : 600

Rack travel in mm : 20.00  
Tolerance mm : + 0.80

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 550  
Aneroid pressure

hPa : 1100

Del. quantity  
cm<sup>3</sup>/1000 strokes : 252.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : + 4.0

Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

RATED SPEED

control lever  
position degree : 100.0  
tolerance degree : + 4.0

rack travel mm : 14.10  
Rated speed rpm : 1098  
Tolerance 1/min : + 8

rack travel mm : 4.00  
Rated speed rpm : 1200  
Tolerance 1/min : + 15

rack travel mm : 0.75  
Tolerance mm : + 0.75  
Rated speed rpm : 1300

LOW IDLE

control lever  
position degree : 73.0  
tolerance degree : + 4.0



Testing:

Rated speed rpm : 300  
 rack travel mm : 5.50  
 Tolerance mm : +- 0.10

rack travel mm : 2.00  
 Rated speed rpm : 400  
 Tolerance 1/min : +- 20

Rated speed rpm : 200

CRT mm min. : > 8.10

TORQUE CONTROL

Rated speed rpm : 550  
 rack travel mm : 15.10  
 Tolerance mm : +- 0.05

Rated speed rpm : 1050  
 rack travel mm : 15.10  
 Tolerance mm : +- 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 400  
 Pressure hPa : 1100  
 rack travel mm : 15.10  
 Tolerance mm : +- 0.05

MEASUREMENT

Pressure hPa : -  
 Rated speed rpm : 400  
 rack travel mm : 9.15  
 Tolerance mm : +- 0.20

Rated speed rpm : 400

Pressure hPa : 150  
 rack travel mm : 10.05  
 Tolerance mm : +- 0.20

Pressure hPa : 550  
 rack travel mm : 13.85  
 Tolerance mm : +- 0.20

START CUT-OUT

Rated speed rpm : < 220  
 Check speed 1/min : < 240

J10

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure hPa : 1100  
 Rated speed rpm : 1050  
 Del. quantity cm3/1000 strokes : 240.0  
 Tolerance cm3/1000 strokes : +- 3.0  
 Check tolerance cm3/1000S. : +- 6.0  
 Spreed Tolerance cm3/1000 strokes : 8.0  
 Check tolerance cm3/1000S. : 12.0

Aneroid pressure hPa : -  
 Rated speed rpm : 500  
 Del. quantity cm3/1000 strokes : 135.0  
 Tolerance cm3/1000 strokes : +- 1.0  
 Check tolerance cm3/1000S. : +- 4.0  
 Spreed Tolerance cm3/1000 strokes : 8.0  
 Check tolerance cm3/1000S. : 12.0

BREAKAWAY

Rack travel in mm : 14.10  
 Rated speed rpm : 1098  
 Tolerance 1/min : +- 8

STARTING FUEL DELIVERY

Rated speed rpm : 100  
 Del. quantity cm3/1000 strokes : 265.0  
 Tolerance cm3/1000 strokes : +- 20.0  
 Check tolerance cm3/1000S. : +- 24.0

LOW IDLE

Rated speed rpm : 300

rack travel mm : 6.20  
Tolerance mm : + 0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 19.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : + 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : + 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 02.06.95  
Test oil : ISO 4113

Combination No. : 0 402 646 750

Injection pump  
Pump designation : PE6P120A320LS7836  
: -10  
EP type number : 0 412 626 854

Governor  
Governor design. : RQ300/1050PA1031-21  
Governor no. : 0 421 801 772

Cust. part No. : 0260743202

Customer-spec. information  
Customer : MB-NFZ  
Motor : OM401 LA  
Power KW : 200.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Tolerance l/h : ± 10.0

Test nozzle holde  
assembly : 1 688 901 105

Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

Test lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0  
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 5.55  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 20.50  
Tolerance mm : ± 0.50

Firing order : 6- 3- 5- 2- 4-  
: 1-

Phasing : 0-60-120-180-240  
: -300-360  
Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.75

Start of delivery mark

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 1050

Rack travel in mm : 13.00  
Tolerance mm : ± 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 190.0

Tolerance  
 cm<sup>3</sup>/1000 strokes : ± 1.0

---

Check tolerance  
 cm<sup>3</sup>/1000S. : ± 4.0

---

Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 5.0

---

Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0

Rated speed rpm : 300

Rack travel in mm : 5.80  
 Tolerance mm : ± 0.30

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 19.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : ± 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : ± 6.0

Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 6.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 10.0

(B) SETTING OF INJECTION PUMP  
 WITH GOVERNOR

---

GUIDE SLEEVE POSITION

Rated speed rpm : 600

Rack travel in mm : 20.00  
 Tolerance mm : ± 0.80

---

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1050  
 Aneroid pressure  
 hPa : 800  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 190.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : ± 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : ± 4.0

Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 5.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0

---

RATED SPEED

control lever  
 position degree : 96.0  
 tolerance degree : ± 4.0

rack travel mm : 12.00  
 Rated speed rpm : 1098  
 Tolerance 1/min : ± 8

rack travel mm : 4.00  
 Rated speed rpm : 1190  
 Tolerance 1/min : ± 15

rack travel mm : 0.75  
 Tolerance mm : ± 0.75  
 Rated speed rpm : 1300

---

LOW IDLE

control lever  
 position degree : 69.0  
 tolerance degree : ± 4.0

Testing:

Rated speed rpm : 300  
 rack travel mm : 3.50  
 Tolerance mm : ± 0.10

rack travel mm : 2.00  
 Rated speed rpm : 350  
 Tolerance 1/min : ± 20

Rated speed rpm : 200

CRT mm min. : > 5.10

---

TORQUE CONTROL

Rated speed rpm : 1050  
 rack travel mm : 13.00  
 Tolerance mm : ± 0.05

Rated speed rpm : 550  
 rack travel mm : 13.00  
 Tolerance mm : ± 0.10

---

ANEROID/ALTITUDE  
 COMPENSATOR TEST

SETTING

Rated speed rpm : 400  
Pressure hPa : 800  
rack travel mm : 13.00  
Tolerance mm : ± 0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 400  
rack travel mm : 10.90  
Tolerance mm : ± 0.15

Rated speed rpm : 400

Pressure hPa : 200  
rack travel mm : 11.40  
Tolerance mm : ± 0.20

Pressure hPa : 350  
rack travel mm : 12.25  
Tolerance mm : ± 0.20

START CUT-OUT

Rated speed rpm : < 220  
Check speed 1/min : < 240

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure hPa : 800  
Rated speed rpm : 550  
Del. quantity cm<sup>3</sup>/1000 strokes : 189.0  
Tolerance cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance cm<sup>3</sup>/1000S. : ± 6.0  
Spreed Tolerance cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure hPa : -  
Rated speed rpm : 500  
Del. quantity cm<sup>3</sup>/1000 strokes : 132.0  
Tolerance cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance cm<sup>3</sup>/1000S. : ± 4.0  
Spreed Tolerance cm<sup>3</sup>/1000 strokes : 8.0

Check tolerance cm<sup>3</sup>/1000S. : 12.0

BREAKAWAY

Rack travel in mm : 12.00  
Rated speed rpm : 1098  
Tolerance 1/min : ± 8

STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity cm<sup>3</sup>/1000 strokes : 210.0  
Tolerance cm<sup>3</sup>/1000 strokes : ± 15.0  
Check tolerance cm<sup>3</sup>/1000S. : ± 19.0

LOW IDLE

Rated speed rpm : 300  
rack travel mm : 5.80  
Tolerance mm : ± 0.30  
Del. quantity cm<sup>3</sup>/1000 strokes : 19.0  
Tolerance cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance cm<sup>3</sup>/1000S. : ± 6.0  
Spreed Tolerance cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance cm<sup>3</sup>/1000S. : 10.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 01.06.95  
Test oil : ISO 4113  
Combination No. : 0 402 646 751  
Injection pump  
Pump designation : PE6P120A320LS7834  
                  : -10  
EP type number : 0 412 626 853  
Governor  
Governor design. : RQ300/1050PA1031-20  
Governor no. : 0 421 801 774  
Cust. part No. : 0260743402

Customer-spec. information

Customer : MB-NFZ  
Motor : OM401 LA  
Power KW : 213.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1  
Test oil inlet  
temp. °C : 40  
Tolerance °C : + 2.0  
Overflow valve : 1 417 413 047  
Inlet press. bar : 1.5  
Tolerance bar : + 0.1  
Tolerance l/h : + 10.0  
Test nozzle holde  
assembly : 1 688 901 105  
Opening pressure  
bar : 208.5  
Tolerance bar : + 1.5

Test lines : 1 680 750 075  
Outside diameter : 8.0  
x inside diameter : 3.0  
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : + 1.0  
Prestroke mm : 5.25  
Tolerance mm : + 0.05  
test only : + 0.10  
Rack travel in mm : 20.50  
Tolerance mm : + 0.50  
Firing order : 6- 3- 5- 2- 4-  
                  : 1  
Phasing : 0-60-120-180-240  
          : -300  
Tolerance : + 0.30  
Check  
tolerance °NW : + 0.50  
Start of delivery mark  
Barrel no. : 6

BASIC SETTING

Rated speed rpm : 1050  
Rack travel in mm : 14.20  
Tolerance mm : + 0.05  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 202.0

Tolerance  
 cm<sup>3</sup>/1000 strokes : + 1.0

---

Check tolerance  
 cm<sup>3</sup>/1000S. : + 4.0

---

Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 5.0

---

Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0

Rated speed rpm : 300

Rack travel in mm : 7.00  
 Tolerance mm : + 0.30

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 19.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : + 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : + 6.0

Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 6.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 10.0

(B) SETTING OF INJECTION PUMP  
 WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 300  
 guide sleeve  
 travel mm : 1.93  
 Tolerance mm : + 0.10

Rated speed rpm : 1104  
 guide sleeve  
 travel mm : 6.83  
 Tolerance mm : + 0.10

Rated speed rpm : 1050  
 guide sleeve  
 travel mm : 6.50  
 Tolerance mm : + 0.10

Rated speed rpm : 732  
 guide sleeve  
 travel mm : 6.13  
 Tolerance mm : + 0.10

Rated speed rpm : 430  
 guide sleeve  
 travel mm : 4.39  
 Tolerance mm : + 0.10

Rated speed rpm : 540  
 guide sleeve  
 travel mm : 6.00  
 Tolerance mm : + 0.10

Rated speed rpm : 1270  
 guide sleeve  
 travel mm : 11.50  
 Tolerance mm : + 0.50

Rated speed rpm : 829  
 guide sleeve  
 travel mm : 6.38  
 Tolerance mm : + 0.10

GUIDE SLEEVE POSITION

Rated speed rpm : 600

Rack travel in mm : 20.00  
 Tolerance mm : + 0.80

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1050  
 Aneroid pressure  
 hPa : 800

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 202.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : + 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : + 4.0

Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 5.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0

RATED SPEED

control lever  
 position degree : 99.0  
 tolerance degree : + 4.0

rack travel mm : 13.20  
 Rated speed rpm : 1098  
 Tolerance 1/min : + 8

rack travel mm : 4.00  
 Rated speed rpm : 1190  
 Tolerance 1/min : + 15

rack travel mm : 0.75  
 Tolerance mm : + 0.75

Rated speed rpm : 1300

---

LOW IDLE

control lever  
position degree : 73.0  
tolerance degree : +- 4.0

Testing:

Rated speed rpm : 300  
rack travel mm : 4.50  
Tolerance mm : +- 0.10

rack travel mm : 2.00  
Rated speed rpm : 400  
Tolerance 1/min : +- 20

Rated speed rpm : 200  
CRT mm min. : > 6.10

---

TORQUE CONTROL

Rated speed rpm : 1050  
rack travel mm : 14.20  
Tolerance mm : +- 0.05

Rated speed rpm : 550  
rack travel mm : 14.20  
Tolerance mm : +- 0.10

---

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 400  
Pressure hPa : 800  
rack travel mm : 14.20  
Tolerance mm : +- 0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 400  
rack travel mm : 10.60  
Tolerance mm : +- 0.20

Rated speed rpm : 400

Pressure hPa : 200  
rack travel mm : 11.65  
Tolerance mm : +- 0.20

Pressure hPa : 350  
rack travel mm : 13.10  
Tolerance mm : +- 0.20

---

START CUT-OUT

Rated speed rpm : < 220  
Check  
speed 1/min : < 240

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 800  
Rated speed rpm : 550  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 197.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 127.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 4.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

BREAKAWAY

Rack travel in mm : 13.20  
Rated speed rpm : 1098  
Tolerance 1/min : +- 8

---

STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 210.0



Tolerance  
cm<sup>3</sup>/1000 strokes : ± 15.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 19.0

---

LOW IDLE

Rated speed rpm : 300  
rack travel mm : 7.00  
Tolerance mm : ± 0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 19.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 02.06.95  
Test oil : ISO 4113

Combination No. : 0 402 646 752

Injection pump  
Pump designation : PE6P120A320LS7836  
: -10  
EP type number : 0 412 626 854

Governor  
Governor design. : RQ300/1050PA1030-26  
Governor no. : 0 421 801 775

Cust. part No. : 0260742602

Customer-spec. information

Customer : MB-NFZ  
Motor : OM401 LA  
Power KW : 180.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Tolerance l/h : ± 10.0

Test nozzle holde  
assembly : 1 688 901 105

Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

Test lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0  
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 5.55  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 20.50  
Tolerance mm : ± 0.50

Firing order : 6- 3- 5- 2- 4-  
: 1-

Phasing : 0-60-120-180-240  
: -300-360  
Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.50

Start of delivery mark

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 1050

Rack travel in mm : 12.40  
Tolerance mm : ± 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 173.0

Tolerance  
 cm<sup>3</sup>/1000 strokes : + 1.0

---

Check tolerance  
 cm<sup>3</sup>/1000S. : + 4.0

---

Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 5.0

---

Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0

Rated speed rpm : 300

Rack travel in mm : 5.80  
 Tolerance mm : + 0.30

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 19.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : + 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : + 6.0

Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 6.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 10.0

(B) SETTING OF INJECTION PUMP  
 WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 300  
 guide sleeve  
 travel mm : 1.61  
 Tolerance mm : + 0.10

Rated speed rpm : 1103  
 guide sleeve  
 travel mm : 6.37  
 Tolerance mm : + 0.10

Rated speed rpm : 1050  
 guide sleeve  
 travel mm : 6.00  
 Tolerance mm : + 0.10

Rated speed rpm : 431  
 guide sleeve  
 travel mm : 4.05  
 Tolerance mm : + 0.10

Rated speed rpm : 550  
 guide sleeve  
 travel mm : 6.00  
 Tolerance mm : + 0.10

Rated speed rpm : 1280  
 guide sleeve  
 travel mm : 11.50  
 Tolerance mm : + 0.50

GUIDE SLEEVE POSITION

Rated speed rpm : 600  
 Rack travel in mm : 20.00  
 Tolerance mm : + 0.80

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1050  
 Aneroid pressure  
 hPa : 700  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 173.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : + 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : + 4.0

Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 5.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0

RATED SPEED

control lever  
 position degree : 95.0  
 tolerance degree : + 4.0

rack travel mm : 11.40  
 Rated speed rpm : 1098  
 Tolerance 1/min : + 8

rack travel mm : 4.00  
 Rated speed rpm : 1180  
 Tolerance 1/min : + 15

rack travel mm : 0.75  
 Tolerance mm : + 0.75  
 Rated speed rpm : 1300

LOW IDLE

control lever  
 position degree : 72.0  
 tolerance degree : + 4.0

Testing:

Rated speed rpm : 300  
rack travel mm : 5.80  
Tolerance mm : ± 0.10

rack travel mm : 2.00  
Rated speed rpm : 415  
Tolerance 1/min : ± 20

Rated speed rpm : 200

CRT mm min. : > 7.40

---

TORQUE CONTROL

Rated speed rpm : 1050  
rack travel mm : 12.40  
Tolerance mm : ± 0.05

Rated speed rpm : 550  
rack travel mm : 12.40  
Tolerance mm : ± 0.10

---

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 400  
Pressure hPa : 700  
rack travel mm : 12.40  
Tolerance mm : ± 0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 400  
rack travel mm : 10.90  
Tolerance mm : ± 0.15

Rated speed rpm : 400

Pressure hPa : 200  
rack travel mm : 11.45  
Tolerance mm : ± 0.20

Pressure hPa : 300  
rack travel mm : 12.00  
Tolerance mm : ± 0.20

---

START CUT-OUT

Rated speed rpm : < 220  
Check  
speed 1/min : < 240

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 700  
Rated speed rpm : 550  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 169.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0  
Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 132.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0  
Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

BREAKAWAY

Rack travel in mm : 11.40  
Rated speed rpm : 1098  
Tolerance 1/min : ± 8

---

STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 210.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 15.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 19.0

---

LOW IDLE

Rated speed rpm : 300

rack travel mm : 5.80  
Tolerance mm : ± 0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 19.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000s. : ± 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000s. : 10.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 02.06.95  
Test oil : ISO 4113

Combination No. : 0 402 646 753

Injection pump  
Pump designation : PE6P120A320LS7836  
: -10

EP type number : 0 412 626 854

Governor  
Governor design. : RQV300...1050PA1065  
: -3

Governor no. : 0 421 814 142

Cust. part No. : 0260742802

Customer-spec. information

Customer : MB-NFZ  
Motor : OM401 LA  
Power KW : 180.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Overflow quantity  
min. L/h : 110  
Tolerance L/h : ± 10.0

Test nozzle holder  
assembly : 1 688 901 105

Opening pressure  
bar : 208.5

Tolerance bar : ± 1.5

Test lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0  
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 5.55  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 20.50  
Tolerance mm : ± 0.50

Firing order : 6- 3- 5- 2- 4-  
: 1

Phasing : 0-60-120-180-240  
: -300

Tolerance : ± 0.30

Check  
tolerance °NW : ± 0.75

Start of delivery mark

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 1050

Rack travel in mm : 12.40  
Tolerance mm : ± 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 173.0

Tolerance  
cm<sup>3</sup>/1000 strokes : +- 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : +- 4.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

Rated speed rpm : 300

Rack travel in mm : 5.80  
Tolerance mm : +- 0.30

Del. quantity  
cm<sup>3</sup>/1000 strokes : 19.0

Tolerance  
cm<sup>3</sup>/1000 strokes : +- 3.0

Check tolerance  
cm<sup>3</sup>/1000S. : +- 6.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0

Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 300  
guide sleeve  
travel mm : 1.13  
Tolerance mm : +- 0.20

Rated speed rpm : 1108  
guide sleeve  
travel mm : 9.81  
Tolerance mm : +- 0.15

Rated speed rpm : 370  
guide sleeve  
travel mm : 2.00  
Tolerance mm : +- 0.25

Rated speed rpm : 420  
guide sleeve  
travel mm : 2.49  
Tolerance mm : +- 0.25

Rated speed rpm : 750  
guide sleeve  
travel mm : 4.87

Tolerance mm : +- 0.25

Rated speed rpm : 1310  
guide sleeve  
travel mm : 13.50  
Tolerance mm : +- 0.50

GUIDE SLEEVE POSITION

Rated speed rpm : 1220

Rack travel in mm : 11.40  
Tolerance mm : +- 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1050  
Aneroid pressure  
hPa : 700

Del. quantity  
cm<sup>3</sup>/1000 strokes : 173.0  
Tolerance

cm<sup>3</sup>/1000 strokes : +- 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 4.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

RATED SPEED

control lever  
position degree : 101.0  
tolerance degree : +- 4.0

rack travel mm : 11.40  
Rated speed rpm : 1095  
Tolerance 1/min : +- 5

rack travel mm : 4.00  
Rated speed rpm : 1170  
Tolerance 1/min : +- 15

rack travel mm : 0.75  
Tolerance mm : +- 0.75  
Rated speed rpm : 1300

LOW IDLE

control lever  
position degree : 68.0  
tolerance degree : +- 4.0

Testing:

Rated speed rpm : 300  
rack travel mm : 5.80  
Tolerance mm : ± 0.10

Rated speed rpm : 200  
CRT mm min. : > 8.70

Rated speed rpm : 400

TORQUE CONTROL

Rated speed rpm : 1050  
rack travel mm : 12.40  
Tolerance mm : ± 0.05

Rated speed rpm : 550  
rack travel mm : 12.40  
Tolerance mm : ± 0.10

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 400  
Pressure hPa : 700  
rack travel mm : 12.40  
Tolerance mm : ± 0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 400  
rack travel mm : 10.90  
Tolerance mm : ± 0.15

Rated speed rpm : 400

Pressure hPa : 200  
rack travel mm : 11.45  
Tolerance mm : ± 0.20

Pressure hPa : 300  
rack travel mm : 12.00  
Tolerance mm : ± 0.20

START CUT-OUT

Rated speed rpm : < 220  
Check speed 1/min : < 240

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 700  
Rated speed rpm : 550  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 169.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 132.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

BREAKAWAY

Rack travel in mm : 11.40  
Rated speed rpm : 1095  
Tolerance 1/min : ± 5

STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 210.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 15.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 19.0

LOW IDLE

Rated speed rpm : 300



rack travel mm : 5.80  
Tolerance mm :  $\pm$  0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 19.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  3.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 02.06.95  
Test oil : ISO 4113

Combination No. : 0 402 646 754

Injection pump  
Pump designation : PE6P120A320LS7836  
: -10

EP type number : 0 412 626 854

Governor  
Governor design. : RQ300/1050PA1031-22  
Governor no. : 0 421 801 773

Cust. part No. : 0260742902

Customer-spec. information  
Customer : MB-NFZ  
Motor : OM401 LA  
Power KW : 180.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Tolerance l/h : ± 10.0

Test nozzle holder  
assembly : 1 688 901 105

Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

Test lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0  
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 5.55  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 20.50  
Tolerance mm : ± 0.50

Firing order : 6- 3- 5- 2- 4-  
: 1

Phasing : 0-60-120-180-240  
: -300

Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.75

Start of delivery mark

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 1050

Rack travel in mm : 12.40  
Tolerance mm : ± 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 173.0

Tolerance  
 cm<sup>3</sup>/1000 strokes : + 1.0

---

Check tolerance  
 cm<sup>3</sup>/1000S. : + 4.0

---

Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 5.0

---

Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0

Rated speed rpm : 300

Rack travel in mm : 5.60  
 Tolerance mm : + 0.30

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 19.0

Tolerance  
 cm<sup>3</sup>/1000 strokes : + 3.0

Check tolerance  
 cm<sup>3</sup>/1000S. : + 6.0

Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 6.0

Check tolerance  
 cm<sup>3</sup>/1000S. : 10.0

(B) SETTING OF INJECTION PUMP  
 WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 300  
 guide sleeve  
 travel mm : 1.61  
 Tolerance mm : + 0.10

Rated speed rpm : 1103  
 guide sleeve  
 travel mm : 6.37  
 Tolerance mm : + 0.10

Rated speed rpm : 1050  
 guide sleeve  
 travel mm : 6.00  
 Tolerance mm : + 0.10

Rated speed rpm : 431  
 guide sleeve  
 travel mm : 4.05  
 Tolerance mm : + 0.10

Rated speed rpm : 550  
 guide sleeve  
 travel mm : 6.00  
 Tolerance mm : + 0.10

Rated speed rpm : 1280  
 guide sleeve  
 travel mm : 11.50  
 Tolerance mm : + 0.50

GUIDE SLEEVE POSITION

Rated speed rpm : 600  
 Rack travel in mm : 20.00  
 Tolerance mm : + 0.80

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1050  
 Aneroid pressure  
 hPa : 700

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 173.0

Tolerance  
 cm<sup>3</sup>/1000 strokes : + 1.0

Check tolerance  
 cm<sup>3</sup>/1000S. : + 4.0

Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 5.0

Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0

RATED SPEED

control lever  
 position degree : 93.0  
 tolerance degree : + 4.0

rack travel mm : 11.40  
 Rated speed rpm : 1098  
 Tolerance 1/min : + 8

rack travel mm : 4.00  
 Rated speed rpm : 1180  
 Tolerance 1/min : + 15

rack travel mm : 0.75  
 Tolerance mm : + 0.75  
 Rated speed rpm : 1300

LOW IDLE

control lever  
 position degree : 69.0  
 tolerance degree : + 4.0

Testing:

Rated speed rpm : 300  
rack travel mm : 3.50  
Tolerance mm : + 0.10  
  
rack travel mm : 2.00  
Rated speed rpm : 350  
Tolerance 1/min : + 20  
  
Rated speed rpm : 200  
  
CRT mm min. : > 5.10

---

TORQUE CONTROL

Rated speed rpm : 1050  
rack travel mm : 12.40  
Tolerance mm : + 0.05  
  
Rated speed rpm : 550  
rack travel mm : 12.40  
Tolerance mm : + 0.10

---

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 400  
Pressure hPa : 700  
rack travel mm : 12.40  
Tolerance mm : + 0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 400  
rack travel mm : 10.90  
Tolerance mm : + 0.15

Rated speed rpm : 400

Pressure hPa : 200  
rack travel mm : 11.45  
Tolerance mm : + 0.20

Pressure hPa : 300  
rack travel mm : 12.00  
Tolerance mm : + 0.20

---

START CUT-OUT

Rated speed rpm : < 220  
Check  
speed 1/min : < 240

K01

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 700  
Rated speed rpm : 550  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 169.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : + 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : + 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 132.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : + 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : + 4.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

BREAKAWAY

Rack travel in mm : 11.40  
Rated speed rpm : 1098  
Tolerance 1/min : + 8

---

STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 210.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : + 15.0  
Check tolerance  
cm<sup>3</sup>/1000S. : + 19.0

---

LOW IDLE

Rated speed rpm : 300

rack travel mm : 5.60  
Tolerance mm : ± 0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 19.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 02.06.95  
Test oil : ISO 4113

Combination No. : 0 402 646 755

Injection pump  
Pump designation : PE6P120A320LS7836-2  
EP type number : D 412 626 944

Governor  
Governor design. : RQV300...1050PA1033  
                  : -20  
Governor no. : 0 421 814 140

Cust. part No. : 0260742702

Customer-spec. information  
Customer : MB-NFZ  
Motor : OM401 LA  
Power KW : 180.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Tolerance L/h : ± 10.0

Test nozzle holder  
assembly : 1 688 901 105

Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

Test Lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0

x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 5.55  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 20.50  
Tolerance mm : ± 0.50

Firing order : 6- 3- 5- 2- 4-  
                  : 1-

Phasing : 0-60-120-180-240  
          : -300-360  
Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.75

Start of delivery mark

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 1050

Rack travel in mm : 12.40  
Tolerance mm : ± 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 173.0

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

Rated speed rpm : 300

Rack travel in mm : 5.80  
Tolerance mm : ± 0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 19.0

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 300  
guide sleeve  
travel mm : 1.29  
Tolerance mm : ± 0.20

Rated speed rpm : 1107  
guide sleeve  
travel mm : 8.52  
Tolerance mm : ± 0.15

Rated speed rpm : 558  
guide sleeve  
travel mm : 4.53  
Tolerance mm : ± 0.25

Rated speed rpm : 608  
guide sleeve  
travel mm : 5.03  
Tolerance mm : ± 0.25

Rated speed rpm : 820  
guide sleeve  
travel mm : 6.13  
Tolerance mm : ± 0.25

Rated speed rpm : 1183  
guide sleeve  
travel mm : 10.00  
Tolerance mm : ± 0.25

Rated speed rpm : 1280  
guide sleeve  
travel mm : 11.50  
Tolerance mm : ± 0.50

GUIDE SLEEVE POSITION

Rated speed rpm : 1150  
Rack travel in mm : 11.40  
Tolerance mm : ± 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1050  
Aneroid pressure  
hPa : 700  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 173.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0  
Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

RATED SPEED

control lever  
position degree : 119.0  
tolerance degree : ± 4.0

rack travel mm : 11.40  
Rated speed rpm : 1095  
Tolerance 1/min : ± 5

rack travel mm : 4.00  
Rated speed rpm : 1170  
Tolerance 1/min : ± 15

rack travel mm : 0.75  
Tolerance mm : ± 0.75  
Rated speed rpm : 1300

LOW IDLE

control lever  
position degree : 66.0  
tolerance degree : ± 4.0

Testing:

Rated speed rpm : 300  
rack travel mm : 5.80  
Tolerance mm : ± 0.10

Rated speed rpm : 200

CRT mm min. : > 7.60

Rated speed rpm : 375

---

TORQUE CONTROL

Rated speed rpm : 1050  
rack travel mm : 12.40  
Tolerance mm : ± 0.05

Rated speed rpm : 550  
rack travel mm : 12.40  
Tolerance mm : ± 0.10

---

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 400  
Pressure hPa : 700  
rack travel mm : 12.40  
Tolerance mm : ± 0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 400  
rack travel mm : 10.90  
Tolerance mm : ± 0.15

Rated speed rpm : 400

Pressure hPa : 200  
rack travel mm : 11.45  
Tolerance mm : ± 0.20

Pressure hPa : 300  
rack travel mm : 12.00  
Tolerance mm : ± 0.20

---

START CUT-OUT

Rated speed rpm : < 220  
Check  
speed 1/min : < 240

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 700  
Rated speed rpm : 550  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 169.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 132.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

BREAKAWAY

Rack travel in mm : 11.40  
Rated speed rpm : 1095  
Tolerance 1/min : ± 5

---

STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 210.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 15.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 19.0



---

LOW IDLE

Rated speed rpm : 300  
rack travel mm : 5.80  
Tolerance mm :  $\pm$  0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 19.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  3.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 12.06.95  
Test oil : ISO 4113  
Combination No. : 0 402 646 756  
Injection pump  
Pump designation : PE6P120A320LS7834  
                  : -10  
EP type number : 0 412 626 853  
Governor  
Governor design. : RQV300...1050PA1168  
                  : -6  
Governor no. : 0 421 814 138  
Cust. part No. : 0260743902

Customer-spec. information

Customer : MB-NFZ  
Motor : OM401 LA  
Power KW : 230.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1  
Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0  
Overflow valve : 1 417 413 047  
Inlet press. bar : 1.5  
Tolerance bar : ± 0.1  
Tolerance l/h : ± 10.0  
Test nozzle holder  
assembly : 1 688 901 105  
Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

K07

Test lines : 1 680 750 075  
Outside diameter : 8.0  
x inside diameter : 3.0  
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0  
Prestroke mm : 5.25  
Tolerance mm : ± 0.05  
test only : ± 0.10  
Rack travel in mm : 20.50  
Tolerance mm : ± 0.50  
Firing order : 6- 3- 5- 2- 4-  
                  : 1-  
Phasing : 0-60-120-180-240  
          : -300-360  
Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.75  
Start of delivery mark  
Barrel no. : 6

BASIC SETTING

Rated speed rpm : 550  
Rack travel in mm : 14.80  
Tolerance mm : ± 0.05  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 230.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 1.0

---

Check tolerance  
cm<sup>3</sup>/1000S. : + 4.0

---

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

---

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

Rated speed rpm : 300

Rack travel in mm : 6.30  
Tolerance mm : + 0.30

Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 3.0

Check tolerance  
cm<sup>3</sup>/1000S. : + 6.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0

Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

---

GUIDE SLEEVE TRAVEL

Rated speed rpm : 300  
guide sleeve  
travel mm : 1.29  
Tolerance mm : + 0.20

Rated speed rpm : 1108  
guide sleeve  
travel mm : 8.53  
Tolerance mm : + 0.15

Rated speed rpm : 558  
guide sleeve  
travel mm : 4.53  
Tolerance mm : + 0.25

Rated speed rpm : 608  
guide sleeve  
travel mm : 5.03  
Tolerance mm : + 0.25

Rated speed rpm : 820  
guide sleeve  
travel mm : 6.13  
Tolerance mm : + 0.25

Rated speed rpm : 1183  
guide sleeve  
travel mm : 10.00  
Tolerance mm : + 0.25

Rated speed rpm : 1280  
guide sleeve  
travel mm : 11.50  
Tolerance mm : + 0.50

---

GUIDE SLEEVE POSITION

Rated speed rpm : 1145

Rack travel in mm : 13.80  
Tolerance mm : + 1.30

---

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 550  
Aneroid pressure  
hPa : 1000

Del. quantity  
cm<sup>3</sup>/1000 strokes : 230.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : + 4.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

---

RATED SPEED

control lever  
position degree : 121.0  
tolerance degree : + 4.0

rack travel mm : 13.80  
Rated speed rpm : 1095  
Tolerance 1/min : + 5

rack travel mm : 4.00  
Rated speed rpm : 1190  
Tolerance 1/min : + 15

rack travel mm : 0.75  
Tolerance mm : + 0.75  
Rated speed rpm : 1300

---

LOW IDLE

control lever  
position degree : 60.0  
tolerance degree : ± 4.0

Testing:

Rated speed rpm : 300  
rack travel mm : 4.50  
Tolerance mm : ± 0.10

Rated speed rpm : 200

CRT mm min. : > 6.30

Rated speed rpm : 350

---

TORQUE CONTROL

Rated speed rpm : 550  
rack travel mm : 14.80  
Tolerance mm : ± 0.05

Rated speed rpm : 1050  
rack travel mm : 14.80  
Tolerance mm : ± 0.10

Rated speed rpm : 700  
rack travel mm : 14.80  
Tolerance mm : ± 0.10

---

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 400  
Pressure hPa : 1000  
rack travel mm : 14.80  
Tolerance mm : ± 0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 400  
rack travel mm : 10.80  
Tolerance mm : ± 0.15

Rated speed rpm : 400

Pressure hPa : 400  
rack travel mm : 12.90  
Tolerance mm : ± 0.20

Pressure hPa : 600  
rack travel mm : 14.15  
Tolerance mm : ± 0.20

K09

---

START CUT-OUT

Rated speed rpm : < 220

Check  
speed 1/min : < 240

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 1000

Rated speed rpm : 1050

Del. quantity  
cm<sup>3</sup>/1000 strokes : 229.0

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0

Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0

Spread  
Tolerance

cm<sup>3</sup>/1000 strokes : 8.0

Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure  
hPa : -

Rated speed rpm : 500

Del. quantity  
cm<sup>3</sup>/1000 strokes : 134.0

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0

Spread  
Tolerance

cm<sup>3</sup>/1000 strokes : 8.0

Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

BREAKAWAY

Rack travel in mm : 13.80

Rated speed rpm : 1095

Tolerance 1/min : ± 5

---

STARTING FUEL DELIVERY

Rated speed rpm : 100

Del. quantity  
cm<sup>3</sup>/1000 strokes : 210.0

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 15.0

Check tolerance  
cm<sup>3</sup>/1000S. : ± 19.0

---

LOW IDLE

Rated speed rpm : 300  
rack travel mm : 6.30  
Tolerance mm :  $\pm$  0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  3.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 02.06.95  
Test oil : ISO 4113

Combination No. : 0 402 646 757

Injection pump  
Pump designation : PE6P120A320LS7836  
: -10  
EP type number : 0 412 626 854

Governor  
Governor design. : RQ300/1050PA1030-25  
Governor no. : 0 421 801 771

Cust. part No. : 0260743002

Customer-spec. information  
Customer : MB-NFZ  
Motor : OM401 LA  
Power KW : 200.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Tolerance l/h : ± 10.0

Test nozzle holde  
assembly : 1 688 901 105

Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

Test Lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0  
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 5.55  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 20.50  
Tolerance mm : ± 0.50

Firing order : 6- 3- 5- 2- 4-  
: 1-

Phasing : 0-60-120-180-240  
: -300-360  
Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.75

Start of delivery mark

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 1050

Rack travel in mm : 13.00  
Tolerance mm : ± 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 190.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 1.0

---

Check tolerance  
cm<sup>3</sup>/1000S. : + 4.0

---

Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

---

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

Rated speed rpm : 300

Rack travel in mm : 5.80  
Tolerance mm : + 0.30

Del. quantity  
cm<sup>3</sup>/1000 strokes : 19.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : + 3.0

Check tolerance  
cm<sup>3</sup>/1000S. : + 6.0

Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

---

GUIDE SLEEVE POSITION

Rated speed rpm : 600

Rack travel in mm : 20.00  
Tolerance mm : + 0.80

---

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1050  
Aneroid pressure  
hPa : 800  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 190.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : + 4.0

Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

---

RATED SPEED

control lever  
position degree : 95.0  
tolerance degree : + 4.0

rack travel mm : 12.00  
Rated speed rpm : 1098  
Tolerance 1/min : + 8

rack travel mm : 4.00  
Rated speed rpm : 1185  
Tolerance 1/min : + 15

rack travel mm : 0.75  
Tolerance mm : + 0.75  
Rated speed rpm : 1300

---

LOW IDLE

control lever  
position degree : 72.0  
tolerance degree : + 4.0

Testing:

Rated speed rpm : 300  
rack travel mm : 5.80  
Tolerance mm : + 0.10

rack travel mm : 2.00  
Rated speed rpm : 415  
Tolerance 1/min : + 20

Rated speed rpm : 200

CRT mm min. : > 7.60

---

TORQUE CONTROL

Rated speed rpm : 1050  
rack travel mm : 13.00  
Tolerance mm : + 0.05

Rated speed rpm : 550  
rack travel mm : 13.00  
Tolerance mm : + 0.10

---

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 400  
Pressure hPa : 800  
rack travel mm : 13.00  
Tolerance mm : ± 0.05

#### MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 400  
rack travel mm : 10.90  
Tolerance mm : ± 0.15

Rated speed rpm : 400

Pressure hPa : 200  
rack travel mm : 11.40  
Tolerance mm : ± 0.20

Pressure hPa : 350  
rack travel mm : 12.25  
Tolerance mm : ± 0.20

#### START CUT-OUT

Rated speed rpm : < 220  
Check  
speed 1/min : < 240

#### FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 800  
Rated speed rpm : 550  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 189.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 132.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0

Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

#### BREAKAWAY

Rack travel in mm : 12.00  
Rated speed rpm : 1098  
Tolerance 1/min : ± 8

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 210.0  
Tolerance  
cm<sup>3</sup>/1000 stroke's : ± 15.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 19.0

#### LOW IDLE

Rated speed rpm : 300  
rack travel mm : 5.80  
Tolerance mm : ± 0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 19.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

End of test specification sheet



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 01.06.95  
Test oil : ISO 4113

Combination No. : 0 402 646 758

Injection pump  
Pump designation : PE6P120A320LS7834  
: -10  
EP type number : 0 412 626 853

Governor  
Governor design. : RQ300/1050PA1030-24  
Governor no. : 0 421 801 770

Cust. part No. : 0260743302

Customer-spec. information

Customer : MB-NFZ  
Motor : OM401 LA  
Power KW : 213.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Tolerance l/h : ± 10.0

Test nozzle holde  
assembly : 1 688 901 105

Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

Test lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0  
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 5.25  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 20.50  
Tolerance mm : ± 0.50

Firing order : 6- 3- 5- 2- 4-  
: 1

Phasing : 0-60-120-180-240  
: -300

Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.50

Start of delivery mark

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 1050

Rack travel in mm : 14.20  
Tolerance mm : ± 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 202.0

Tolerance  
 cm<sup>3</sup>/1000 strokes : + 1.0  


---

 Check tolerance  
 cm<sup>3</sup>/1000S. : + 4.0  


---

 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 5.0  


---

 Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0  
 Rated speed rpm : 300  
 Rack travel in mm : 7.00  
 Tolerance mm : + 0.30  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 19.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : + 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : + 6.0  
 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 6.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 10.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 300  
 guide sleeve  
 travel mm : 1.78  
 Tolerance mm : + 0.10  
 Rated speed rpm : 1104  
 guide sleeve  
 travel mm : 6.69  
 Tolerance mm : + 0.10  
 Rated speed rpm : 1050  
 guide sleeve  
 travel mm : 6.35  
 Tolerance mm : + 0.10  
 Rated speed rpm : 818  
 guide sleeve  
 travel mm : 6.09  
 Tolerance mm : + 0.10  
 Rated speed rpm : 410  
 guide sleeve  
 travel mm : 4.39  
 Tolerance mm : + 0.10

Rated speed rpm : 510  
 guide sleeve  
 travel mm : 6.00  
 Tolerance mm : + 0.10  
 Rated speed rpm : 1270  
 guide sleeve  
 travel mm : 11.50  
 Tolerance mm : + 0.50  
 Rated speed rpm : 889  
 guide sleeve  
 travel mm : 6.26  
 Tolerance mm : + 0.10

GUIDE SLEEVE POSITION

Rated speed rpm : 600  
 Rack travel in mm : 20.00  
 Tolerance mm : + 0.80

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1050  
 Aneroid pressure  
 hPa : 800  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 202.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : + 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : + 4.0  
 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 5.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0

RATED SPEED

control lever  
 position degree : 100.0  
 tolerance degree : + 4.0  
 rack travel mm : 13.20  
 Rated speed rpm : 1098  
 Tolerance 1/min : + 8  
 rack travel mm : 4.00  
 Rated speed rpm : 1195  
 Tolerance 1/min : + 15  
 rack travel mm : 0.75  
 Tolerance mm : + 0.75

Rated speed rpm : 1300

---

LOW IDLE

control lever  
position degree : 73.0  
tolerance degree : ± 4.0

Testing:

Rated speed rpm : 300  
rack travel mm : 5.70  
Tolerance mm : ± 0.10

rack travel mm : 2.00  
Rated speed rpm : 400  
Tolerance 1/min : ± 20

Rated speed rpm : 200

CRT mm min. : > 7.90

---

TORQUE CONTROL

Rated speed rpm : 1050  
rack travel mm : 14.20  
Tolerance mm : ± 0.05

Rated speed rpm : 550  
rack travel mm : 14.20  
Tolerance mm : ± 0.10

---

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 400  
Pressure hPa : 800  
rack travel mm : 14.20  
Tolerance mm : ± 0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 400  
rack travel mm : 10.60  
Tolerance mm : ± 0.20

Rated speed rpm : 400

Pressure hPa : 200  
rack travel mm : 11.65  
Tolerance mm : ± 0.20

Pressure hPa : 350  
rack travel mm : 13.10  
Tolerance mm : ± 0.20

---

START CUT-OUT

Rated speed rpm : < 220  
Check  
speed 1/min : < 240

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 800  
Rated speed rpm : 550  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 197.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 127.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

BREAKAWAY

Rack travel in mm : 13.20  
Rated speed rpm : 1098  
Tolerance 1/min : ± 8

---

STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 210.0

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 15.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 19.0

---

LOW IDLE

Rated speed rpm : 300  
rack travel mm : 7.00  
Tolerance mm : ± 0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 19.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 02.06.95  
Test oil : ISO 4113

Combination No. : 0 402 646 759

Injection pump  
Pump designation : PE6P120A320LS7836  
: -10  
EP type number : 0 412 626 854

Governor  
Governor design. : RQV300...1050PA1033  
: -19  
Governor no. : 0 421 814 137

Cust. part No. : 0260743102

Customer spec. information  
Customer : MB-NFZ  
Motor : OM401 LA  
Power Kw : 200.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Tolerance l/h : ± 10.0

Test nozzle holde  
assembly : 1 688 901 105

Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

Test Lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0  
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 5.55  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 20.50  
Tolerance mm : ± 0.50

Firing order : 6- 3- 5- 2- 4-  
: 1-

Phasing : 0-60-120-180-240  
: -300-360  
Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.75

Start of delivery mark

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 1050

Rack travel in mm : 13.00  
Tolerance mm : ± 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 190.0

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0

---

Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0

---

Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

---

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

Rated speed rpm : 300

Rack travel in mm : 5.80  
Tolerance mm : ± 0.30

Del. quantity  
cm<sup>3</sup>/1000 strokes : 19.0

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0

Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0

Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0

Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

---

GUIDE SLEEVE POSITION

Rated speed rpm : 1155

Rack travel in mm : 12.00  
Tolerance mm : ± 1.30

---

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1050

Aneroid pressure  
hPa : 800

Del. quantity  
cm<sup>3</sup>/1000 strokes : 190.0

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0

Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

---

RATED SPEED

control lever  
position degree : 120.0  
tolerance degree : ± 4.0

rack travel mm : 12.00  
Rated speed rpm : 1095  
Tolerance 1/min : ± 5

rack travel mm : 4.00  
Rated speed rpm : 1175  
Tolerance 1/min : ± 15

rack travel mm : 0.75  
Tolerance mm : ± 0.75  
Rated speed rpm : 1300

---

LOW IDLE

control lever  
position degree : 66.0  
tolerance degree : ± 4.0

Testing:

Rated speed rpm : 300  
rack travel mm : 5.80  
Tolerance mm : ± 0.10

Rated speed rpm : 200

CRT mm min. : > 7.60

Rated speed rpm : 350

---

TORQUE CONTROL

Rated speed rpm : 1050  
rack travel mm : 13.00  
Tolerance mm : ± 0.05

Rated speed rpm : 550  
rack travel mm : 13.00  
Tolerance mm : ± 0.10

---

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 400

Pressure hPa : 800  
rack travel mm : 13.00  
Tolerance mm : ± 0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 400  
rack travel mm : 10.90  
Tolerance mm : ± 0.15

Rated speed rpm : 400

Pressure hPa : 200  
rack travel mm : 11.40  
Tolerance mm : ± 0.20

Pressure hPa : 350  
rack travel mm : 12.25  
Tolerance mm : ± 0.20

START CUT-OUT

Rated speed rpm : < 220  
Check  
speed 1/min : < 240

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 800  
Rated speed rpm : 550  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 189.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 132.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

BREAKAWAY

Rack travel in mm : 12.00  
Rated speed rpm : 1095  
Tolerance 1/min : ± 5

STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 210.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 15.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 19.0

LOW IDLE

Rated speed rpm : 300  
rack travel mm : 5.80  
Tolerance mm : ± 0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 19.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 12.06.95  
Test oil : ISO 4113

Combination No. : 0 402 646 760

Injection pump  
Pump designation : PE6P120A320LS7834  
: -10  
EP type number : 0 412 626 853

Governor  
Governor design. : RQ300/1050PA1030-23  
Governor no. : 0 421 801 769

Cust. part No. : 0260743502

Customer-spec. information

Customer : MB-NFZ  
Motor : OM401 LA  
Power kW : 230.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Tolerance l/h : ± 10.0

Test nozzle holder  
assembly : 1 688 901 105

Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

Test lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0  
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 5.25  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 20.50  
Tolerance mm : ± 0.50

Firing order : 6- 3- 5- 2- 4-  
: 1-

Phasing : 0-60-120-180-240  
: -300-360  
Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.75

Start of delivery mark

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 550

Rack travel in mm : 14.80  
Tolerance mm : ± 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 230.0



Tolerance  
cm<sup>3</sup>/1000 strokes : + 1.0

---

Check tolerance  
cm<sup>3</sup>/1000S. : + 4.0

---

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

---

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

Rated speed rpm : 300

Rack travel in mm : 6.30  
Tolerance mm : + 0.30

Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 3.0

Check tolerance  
cm<sup>3</sup>/1000S. : + 6.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0

Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

---

GUIDE SLEEVE TRAVEL

Rated speed rpm : 300  
guide sleeve  
travel mm : 1.78  
Tolerance mm : + 0.10

Rated speed rpm : 1104  
guide sleeve  
travel mm : 6.51  
Tolerance mm : + 0.10

Rated speed rpm : 1050  
guide sleeve  
travel mm : 6.00  
Tolerance mm : + 0.10

Rated speed rpm : 421  
guide sleeve  
travel mm : 4.00  
Tolerance mm : + 0.10

Rated speed rpm : 550  
guide sleeve  
travel mm : 6.00  
Tolerance mm : + 0.10

Rated speed rpm : 1270  
guide sleeve  
travel mm : 11.50  
Tolerance mm : + 0.50

---

GUIDE SLEEVE POSITION

Rated speed rpm : 600

Rack travel in mm : 20.00  
Tolerance mm : + 0.80

---

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 550  
Aneroid pressure

hPa : 1000

Del. quantity  
cm<sup>3</sup>/1000 strokes : 230.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : + 4.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

---

RATED SPEED

control lever  
position degree : 100.0  
tolerance degree : + 4.0

rack travel mm : 13.80  
Rated speed rpm : 1098  
Tolerance 1/min : + 8

rack travel mm : 4.00  
Rated speed rpm : 1195  
Tolerance 1/min : + 15

rack travel mm : 0.75  
Tolerance mm : + 0.75  
Rated speed rpm : 1300

---

LOW IDLE

control lever  
position degree : 74.0  
tolerance degree : + 4.0

Testing:

Rated speed rpm : 300  
rack travel mm : 5.20  
Tolerance mm : + 0.10

rack travel mm : 2.00  
Rated speed rpm : 405  
Tolerance 1/min : + 20

Rated speed rpm : 200

CRT mm min. : > 7.00

TORQUE CONTROL

Rated speed rpm : 550  
rack travel mm : 14.80  
Tolerance mm : + 0.05

Rated speed rpm : 1050  
rack travel mm : 14.80  
Tolerance mm : + 0.10

Rated speed rpm : 700  
rack travel mm : 14.80  
Tolerance mm : + 0.05

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 400  
Pressure hPa : 1000  
rack travel mm : 14.80  
Tolerance mm : + 0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 400  
rack travel mm : 10.80  
Tolerance mm : + 0.15

Rated speed rpm : 400

Pressure hPa : 400  
rack travel mm : 12.90  
Tolerance mm : + 0.20

Pressure hPa : 600  
rack travel mm : 14.15  
Tolerance mm : + 0.20

START CUT-OUT

Rated speed rpm : < 220  
Check  
speed 1/min : < 240

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 1000  
Rated speed rpm : 1050  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 229.0  
Tolerance

cm<sup>3</sup>/1000 strokes : + 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : + 6.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 134.0  
Tolerance

cm<sup>3</sup>/1000 strokes : + 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : + 4.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

BREAKAWAY

Rack travel in mm : 13.80  
Rated speed rpm : 1098  
Tolerance 1/min : + 8

STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 210.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : + 15.0  
Check tolerance  
cm<sup>3</sup>/1000S. : + 19.0

---

LOW IDLE

Rated speed rpm : 300  
rack travel mm : 6.30  
Tolerance mm :  $\pm$  0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  3.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 12.06.95  
Test oil : ISO 4113

Combination No. : 0 402 646 761

Injection pump  
Pump designation : PE6P120A320LS7834  
: -10  
EP type number : 0 412 626 853

Governor  
Governor design. : RQ300/1050PA1031-19  
Governor no. : 0 421 801 768

Cust. part No. : 0260743802

Customer-spec. information

Customer : MB-NFZ  
Motor : OM401 LA  
Power KW : 230.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Tolerance l/h : ± 10.0

Test nozzle holde  
assembly : 1 688 901 105

Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

Test lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0  
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 5.25  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 20.50  
Tolerance mm : ± 0.50

Firing order : 6- 3- 5- 2- 4-  
: 1-

Phasing : 0-60-120-180-240  
: -300-360  
Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.75

Start of delivery mark

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 550

Rack travel in mm : 14.80  
Tolerance mm : ± 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 230.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : + 4.0

Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

Rated speed rpm : 300

Rack travel in mm : 6.30  
Tolerance mm : + 0.30

Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 3.0

Check tolerance  
cm<sup>3</sup>/1000S. : + 6.0

Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0

Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 300  
guide sleeve  
travel mm : 1.78  
Tolerance mm : + 0.10

Rated speed rpm : 1104  
guide sleeve  
travel mm : 6.51  
Tolerance mm : + 0.10

Rated speed rpm : 1050  
guide sleeve  
travel mm : 6.00  
Tolerance mm : + 0.10

Rated speed rpm : 379  
guide sleeve  
travel mm : 3.11  
Tolerance mm : + 0.10

Rated speed rpm : 550  
guide sleeve  
travel mm : 6.00  
Tolerance mm : + 0.10

Rated speed rpm : 1270  
guide sleeve  
travel mm : 11.50  
Tolerance mm : + 0.50

GUIDE SLEEVE POSITION

Rated speed rpm : 600  
Rack travel in mm : 20.00  
Tolerance mm : + 0.80

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 550  
Aneroid pressure  
hPa : 1000

Del. quantity  
cm<sup>3</sup>/1000 strokes : 230.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : + 4.0

Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

RATED SPEED

control lever  
position degree : 99.0  
tolerance degree : + 4.0

rack travel mm : 13.80  
Rated speed rpm : 1098  
Tolerance 1/min : + 8

rack travel mm : 4.00  
Rated speed rpm : 1195  
Tolerance 1/min : + 15

rack travel mm : 0.75  
Tolerance mm : + 0.75  
Rated speed rpm : 1300

LOW IDLE

control lever  
position degree : 69.0  
tolerance degree : + 4.0

Testing:

Rated speed rpm : 300  
 rack travel mm : 3.50  
 Tolerance mm : + 0.10

rack travel mm : 2.00  
 Rated speed rpm : 350  
 Tolerance 1/min : + 20

Rated speed rpm : 200

CRT mm min. : > 5.30

TORQUE CONTROL

Rated speed rpm : 550  
 rack travel mm : 14.80  
 Tolerance mm : + 0.05

Rated speed rpm : 1050  
 rack travel mm : 14.80  
 Tolerance mm : + 0.10

Rated speed rpm : 700  
 rack travel mm : 14.80  
 Tolerance mm : + 0.05

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 400  
 Pressure hPa : 1000  
 rack travel mm : 14.80  
 Tolerance mm : + 0.05

MEASUREMENT

Pressure hPa : -  
 Rated speed rpm : 400  
 rack travel mm : 10.80  
 Tolerance mm : + 0.15

Rated speed rpm : 400

Pressure hPa : 400  
 rack travel mm : 12.90  
 Tolerance mm : + 0.20

Pressure hPa : 600  
 rack travel mm : 14.15  
 Tolerance mm : + 0.20

START CUT-OUT

K27

Rated speed rpm : < 220  
 Check speed 1/min : < 240

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure hPa : 1000  
 Rated speed rpm : 1050  
 Del. quantity cm<sup>3</sup>/1000 strokes : 229.0  
 Tolerance cm<sup>3</sup>/1000 strokes : + 3.0  
 Check tolerance cm<sup>3</sup>/1000S. : + 6.0  
 Spreed Tolerance cm<sup>3</sup>/1000 strokes : 8.0  
 Check tolerance cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure hPa : -  
 Rated speed rpm : 500  
 Del. quantity cm<sup>3</sup>/1000 strokes : 134.0  
 Tolerance cm<sup>3</sup>/1000 strokes : + 1.0  
 Check tolerance cm<sup>3</sup>/1000S. : + 4.0  
 Spreed Tolerance cm<sup>3</sup>/1000 strokes : 8.0  
 Check tolerance cm<sup>3</sup>/1000S. : 12.0

BREAKAWAY

Rack travel in mm : 13.80  
 Rated speed rpm : 1098  
 Tolerance 1/min : + 8

STARTING FUEL DELIVERY

Rated speed rpm : 100  
 Del. quantity cm<sup>3</sup>/1000 strokes : 210.0  
 Tolerance cm<sup>3</sup>/1000 strokes : + 15.0  
 Check tolerance cm<sup>3</sup>/1000S. : + 19.0

---

LOW IDLE

Rated speed rpm : 300  
rack travel mm : 6.30  
Tolerance mm :  $\pm$  0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  3.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

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End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 12.06.95  
Test oil : ISO 4113

Combination No. : 0 402 646 762

Injection pump  
Pump designation : PE6P120A320LS7834  
: -10  
EP type number : 0 412 626 853

Governor  
Governor design. : RQV300...1050PA1033  
: -18  
Governor no. : 0 421 814 136

Cust. part No. : 0260743602

Customer-spec. information  
Customer : MB-NFZ  
Motor : OM401 LA  
Power KW : 230.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : + 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5  
Tolerance bar : + 0.1

Tolerance l/h : + 10.0

Test nozzle holde  
assembly : 1 688 901 105

Opening pressure  
bar : 208.5  
Tolerance bar : + 1.5

Test Lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0  
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : + 1.0

Prestroke mm : 5.25  
Tolerance mm : + 0.05

test only : + 0.10

Rack travel in mm : 20.50  
Tolerance mm : + 0.50

Firing order : 6- 3- 5- 2- 4-  
: 1-

Phasing : 0-60-120-180-240  
: -300-360  
Tolerance : + 0.30  
Check  
tolerance °NW : + 0.75

Start of delivery mark

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 550

Rack travel in mm : 14.80  
Tolerance mm : + 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 230.0



Tolerance  
 cm<sup>3</sup>/1000 strokes : + 1.0

---

Check tolerance  
 cm<sup>3</sup>/1000S. : + 4.0

---

Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 5.0

---

Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0

Rated speed rpm : 300

Rack travel in mm : 6.30  
 Tolerance mm : + 0.30  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 13.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : + 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : + 6.0  
 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 6.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 10.0

(B) SETTING OF INJECTION PUMP  
 WITH GOVERNOR

---

GUIDE SLEEVE TRAVEL

Rated speed rpm : 300  
 guide sleeve  
 travel mm : 1.29  
 Tolerance mm : + 0.20

Rated speed rpm : 1108  
 guide sleeve  
 travel mm : 8.53  
 Tolerance mm : + 0.15

Rated speed rpm : 558  
 guide sleeve  
 travel mm : 4.53  
 Tolerance mm : + 0.25

Rated speed rpm : 608  
 guide sleeve  
 travel mm : 5.03  
 Tolerance mm : + 0.25

Rated speed rpm : 820  
 guide sleeve  
 travel mm : 6.13  
 Tolerance mm : + 0.25

L02

Rated speed rpm : 1183  
 guide sleeve  
 travel mm : 10.00  
 Tolerance mm : + 0.25

Rated speed rpm : 1280  
 guide sleeve  
 travel mm : 11.50  
 Tolerance mm : + 0.50

---

GUIDE SLEEVE POSITION

Rated speed rpm : 1145  
 Rack travel in mm : 13.80  
 Tolerance mm : + 1.30

---

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 550  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 230.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : + 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : + 4.0  
 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 5.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0

---

RATED SPEED

control lever  
 position degree : 121.0  
 tolerance degree : + 4.0

rack travel mm : 13.80  
 Rated speed rpm : 1095  
 Tolerance 1/min : + 5

rack travel mm : 4.00  
 Rated speed rpm : 1195  
 Tolerance 1/min : + 15

rack travel mm : 0.75  
 Tolerance mm : + 0.75  
 Rated speed rpm : 1300

---

LOW IDLE

control lever  
position degree : 66.0  
tolerance degree : ± 4.0

Testing:

Rated speed rpm : 300  
rack travel mm : 5.20  
Tolerance mm : ± 0.10

Rated speed rpm : 200

CRT mm min. : > 7.00

Rated speed rpm : 350

---

TORQUE CONTROL

Rated speed rpm : 550  
rack travel mm : 14.80  
Tolerance mm : ± 0.05

Rated speed rpm : 1050  
rack travel mm : 14.80  
Tolerance mm : ± 0.10

Rated speed rpm : 700  
rack travel mm : 14.80  
Tolerance mm : ± 0.05

---

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 400  
Pressure hPa : 1000  
rack travel mm : 14.80  
Tolerance mm : ± 0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 400  
rack travel mm : 10.80  
Tolerance mm : ± 0.15

Rated speed rpm : 400

Pressure hPa : 400  
rack travel mm : 12.90  
Tolerance mm : ± 0.20

Pressure hPa : 600  
rack travel mm : 14.15  
Tolerance mm : ± 0.20

---

START CUT-OUT

Rated speed rpm : < 220  
Check  
speed 1/min : < 240

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 1000  
Rated speed rpm : 1050  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 229.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 134.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

BREAKAWAY

Rack travel in mm : 13.80  
Rated speed rpm : 1095  
Tolerance 1/min : ± 5

---

STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 210.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 15.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 19.0

---

LOW IDLE

Rated speed rpm : 300  
rack travel mm : 6.30  
Tolerance mm :  $\pm$  0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  3.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 12.06.95  
Test oil : ISO 4113

Combination No. : 0 402 646 763

Injection pump  
Pump designation : PE6P120A320LS7834  
: -10  
EP type number : 0 412 626 853

Governor  
Governor design. : RQV300...1050PA1065  
: -2  
Governor no. : 0 421 814 135

Cust. part No. : 0260743702

Customer-spec. information  
Customer : MB-NFZ  
Motor : OM401 LA  
Power KW : 230.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Tolerance l/h : ± 10.0

Test nozzle holder  
assembly : 1 688 901 105

Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

Test lines : 1 680 750 075  
Outside diameter : 8.0  
x inside diameter : 3.0  
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 5.25  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 20.50  
Tolerance mm : ± 0.50

Firing order : 6- 3- 5- 2- 4-  
: 1

Phasing : 0-60-120-180-240  
: -300  
Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.75

Start of delivery mark

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 550

Rack travel in mm : 14.80  
Tolerance mm : ± 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 230.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : + 4.0

Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

Rated speed rpm : 300

Rack travel in mm : 6.30  
Tolerance mm : + 0.30

Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : + 6.0

Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 300  
guide sleeve  
travel mm : 1.13  
Tolerance mm : + 0.25

Rated speed rpm : 1108  
guide sleeve  
travel mm : 9.82  
Tolerance mm : + 0.25

Rated speed rpm : 370  
guide sleeve  
travel mm : 2.00  
Tolerance mm : + 0.25

Rated speed rpm : 420  
guide sleeve  
travel mm : 2.49  
Tolerance mm : + 0.25

Rated speed rpm : 750  
guide sleeve  
travel mm : 4.87  
Tolerance mm : + 0.25

Rated speed rpm : 1310  
guide sleeve  
travel mm : 13.50  
Tolerance mm : + 0.50

GUIDE SLEEVE POSITION

Rated speed rpm : 1200  
Rack travel in mm : 13.80  
Tolerance mm : + 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 550  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 230.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : + 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : + 4.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

RATED SPEED

control lever  
position degree : 104.0  
tolerance degree : + 4.0

rack travel mm : 13.80  
Rated speed rpm : 1095  
Tolerance 1/min : + 5

rack travel mm : 4.00  
Rated speed rpm : 1195  
Tolerance 1/min : + 15

rack travel mm : 0.75  
Tolerance mm : + 0.75  
Rated speed rpm : 1300

LOW IDLE

control lever  
position degree : 68.0  
tolerance degree : + 4.0

Testing:

Rated speed rpm : 300  
rack travel mm : 5.20  
Tolerance mm : +- 0.10

Rated speed rpm : 200  
CRT mm min. : > 8.10

Rated speed rpm : 350

TORQUE CONTROL

Rated speed rpm : 550  
rack travel mm : 14.80  
Tolerance mm : +- 0.05

Rated speed rpm : 1050  
rack travel mm : 14.80  
Tolerance mm : +- 0.10

Rated speed rpm : 700  
rack travel mm : 14.80  
Tolerance mm : +- 0.05

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 400  
Pressure hPa : 1000  
rack travel mm : 14.80  
Tolerance mm : +- 0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 400  
rack travel mm : 10.80  
Tolerance mm : +- 0.15

Rated speed rpm : 400

Pressure hPa : 400  
rack travel mm : 12.90  
Tolerance mm : +- 0.20

Pressure hPa : 600  
rack travel mm : 14.15  
Tolerance mm : +- 0.20

START CUT-OUT

Rated speed rpm : < 220

L07

Check speed 1/min : < 240

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 1000  
Rated speed rpm : 1050  
Del. quantity  
cm3/1000 strokes : 229.0  
Tolerance  
cm3/1000 strokes : +- 3.0  
Check tolerance  
cm3/1000s. : +- 6.0  
Spreed  
Tolerance  
cm3/1000 strokes : 8.0  
Check tolerance  
cm3/1000s. : 12.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 134.0  
Tolerance  
cm3/1000 strokes : +- 1.0  
Check tolerance  
cm3/1000s. : +- 4.0  
Spreed  
Tolerance  
cm3/1000 strokes : 8.0  
Check tolerance  
cm3/1000s. : 12.0

BREAKAWAY

Rack travel in mm : 13.80  
Rated speed rpm : 1095  
Tolerance 1/min : +- 5

STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm3/1000 strokes : 210.0  
Tolerance  
cm3/1000 strokes : +- 15.0  
Check tolerance  
cm3/1000s. : +- 19.0

LOW IDLE

Rated speed rpm : 300  
rack travel mm : 6.30  
Tolerance mm :  $\pm$  0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  3.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 12.06.95  
Test oil : ISO 4113

Combination No. : 0 402 646 764

Injection pump  
Pump designation : PE6P120A320LS7837-2  
EP type number : 0 412 626 943

Governor  
Governor design. : RQ300/1050PA972-13  
Governor no. : 0 421 801 767

Cust. part No. : 0260742402

Customer-spec. information

Customer : MB-NFZ  
Motor : OM441 LA  
Power KW : 250.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Test nozzle holde  
assembly : 1 688 901 105

Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

Test lines : 1 680 750 075

Outside diameter : 8.0

L09

x inside diameter : 3.0  
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 5.25  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 20.50  
Tolerance mm : ± 0.50

Firing order : 6- 3- 5- 2- 4-  
: 1-

Phasing : 0-60-120-180-240  
: -300-360

Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.75

Start of delivery mark

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 550

Rack travel in mm : 15.10  
Tolerance mm : ± 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 252.0

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0



<hr/>	
Spreed	
Tolerance	
cm <sup>3</sup> /1000 strokes :	5.0
<hr/>	
Check tolerance	
cm <sup>3</sup> /1000S. :	9.0
Rated speed rpm :	300
Rack travel in mm :	6.20
Tolerance mm :	+ 0.30
Del. quantity	
cm <sup>3</sup> /1000 strokes :	19.0
Tolerance	
cm <sup>3</sup> /1000 strokes :	+ 3.0
Check tolerance	
cm <sup>3</sup> /1000S. :	+ 6.0
Spreed	
Tolerance	
cm <sup>3</sup> /1000 strokes :	6.0
Check tolerance	
cm <sup>3</sup> /1000S. :	10.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm :	300
guide sleeve	
travel mm :	1.94
Tolerance mm :	+ 0.10
Rated speed rpm :	1104
guide sleeve	
travel mm :	6.34
Tolerance mm :	+ 0.10
Rated speed rpm :	1050
guide sleeve	
travel mm :	6.00
Tolerance mm :	+ 0.10
Rated speed rpm :	441
guide sleeve	
travel mm :	4.85
Tolerance mm :	+ 0.10
Rated speed rpm :	570
guide sleeve	
travel mm :	6.00
Tolerance mm :	+ 0.10
Rated speed rpm :	1280
guide sleeve	
travel mm :	11.50
Tolerance mm :	+ 0.50

GUIDE SLEEVE POSITION

Rated speed rpm :	600
Rack travel in mm :	20.00
Tolerance mm :	+ 0.80

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm :	550
Aneroid pressure	
hPa :	1100
Del. quantity	
cm <sup>3</sup> /1000 strokes :	252.0
Tolerance	
cm <sup>3</sup> /1000 strokes :	+ 1.0
Check tolerance	
cm <sup>3</sup> /1000S. :	+ 4.0
Spreed	
Tolerance	
cm <sup>3</sup> /1000 strokes :	5.0
Check tolerance	
cm <sup>3</sup> /1000S. :	9.0

RATED SPEED

control lever	
position degree :	100.0
tolerance degree :	+ 4.0
rack travel mm :	14.10
Rated speed rpm :	1098
Tolerance 1/min :	+ 8
rack travel mm :	4.00
Rated speed rpm :	1200
Tolerance 1/min :	+ 15
rack travel mm :	0.75
Tolerance mm :	+ 0.75
Rated speed rpm :	1300

LOW IDLE

control lever	
position degree :	74.0
tolerance degree :	+ 4.0

Testing:

Rated speed rpm :	300
rack travel mm :	5.50
Tolerance mm :	+ 0.10

rack travel mm : 2.00  
Rated speed rpm : 400  
Tolerance 1/min : + 20

Rated speed rpm : 200

CRT mm min. : > 8.50

---

#### TORQUE CONTROL

Rated speed rpm : 550  
rack travel mm : 15.10  
Tolerance mm : + 0.05

Rated speed rpm : 1050  
rack travel mm : 15.10  
Tolerance mm : + 0.10

---

#### ANEROID/ALTITUDE COMPENSATOR TEST

#### SETTING

Rated speed rpm : 400  
Pressure hPa : 1100  
rack travel mm : 15.10  
Tolerance mm : + 0.05

#### MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 400  
rack travel mm : 9.15  
Tolerance mm : + 0.20

Rated speed rpm : 400

Pressure hPa : 150  
rack travel mm : 10.05  
Tolerance mm : + 0.20

Pressure hPa : 550  
rack travel mm : 13.85  
Tolerance mm : + 0.20

---

#### START CUT-OUT

Rated speed rpm : < 220  
Check  
speed 1/min : < 240

---

#### FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 1100  
Rated speed rpm : 1050  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 240.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : + 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : + 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 135.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : + 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : + 4.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

#### BREAKAWAY

Rack travel in mm : 14.10  
Rated speed rpm : 1098  
Tolerance 1/min : + 8

---

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 235.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : + 20.0  
Check tolerance  
cm<sup>3</sup>/1000S. : + 24.0

---

#### LOW IDLE

Rated speed rpm : 300  
rack travel mm : 6.20  
Tolerance mm : + 0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 19.0

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

---

End of test specification sheet



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 12.06.95  
Test oil : ISO 4113

Combination No. : 0 402 646 765

Injection pump  
Pump designation : FE6P120A320LS7837  
: -10

EP type number : 0 412 626 855

Governor  
Governor design. : RQV300...1050PA797  
: -43

Governor no. : 0 421 814 134

Cust. part No. : 0260742502

Customer spec. information

Customer : MB-NFZ  
Motor : OM441 LA  
Power KW : 250.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Overflow quantity  
min. l/h : 110  
Tolerance l/h : ± 10.0

Test nozzle holder  
assembly : 1 688 901 105

Opening pressure  
bar : 208.5

Tolerance bar : ± 1.5

Test lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0  
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 5.25  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 20.50  
Tolerance mm : ± 0.50

Firing order : 6- 3- 5- 2- 4-  
: 1-

Phasing : 0-60-120-180-240  
: -300-360

Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.75

Start of delivery mark

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 550

Rack travel in mm : 15.10  
Tolerance mm : ± 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 252.0

Tolerance  
cm<sup>3</sup>/1000 strokes : +- 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : +- 4.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

Rated speed rpm : 300

Rack travel in mm : 6.20  
Tolerance mm : +- 0.30

Del. quantity  
cm<sup>3</sup>/1000 strokes : 19.0

Tolerance  
cm<sup>3</sup>/1000 strokes : +- 3.0

Check tolerance  
cm<sup>3</sup>/1000S. : +- 6.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0

Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 300  
guide sleeve  
travel mm : 1.29  
Tolerance mm : +- 0.20

Rated speed rpm : 1108  
guide sleeve  
travel mm : 8.54  
Tolerance mm : +- 0.15

Rated speed rpm : 558  
guide sleeve  
travel mm : 4.53  
Tolerance mm : +- 0.25

Rated speed rpm : 608  
guide sleeve  
travel mm : 5.03  
Tolerance mm : +- 0.25

Rated speed rpm : 820  
guide sleeve  
travel mm : 6.13

Tolerance mm : +- 0.25

Rated speed rpm : 1183  
guide sleeve  
travel mm : 10.00  
Tolerance mm : +- 0.25

Rated speed rpm : 1280  
guide sleeve  
travel mm : 11.50  
Tolerance mm : +- 0.50

GUIDE SLEEVE POSITION

Rated speed rpm : 1140

Rack travel in mm : 14.10  
Tolerance mm : +- 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 550  
Aneroid pressure  
hPa : 1100

Del. quantity  
cm<sup>3</sup>/1000 strokes : 252.0

Tolerance  
cm<sup>3</sup>/1000 strokes : +- 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : +- 4.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

RATED SPEED

control lever  
position degree : 122.0  
tolerance degree : +- 4.0

rack travel mm : 14.10  
Rated speed rpm : 1095  
Tolerance 1/min : +- 5

rack travel mm : 4.00  
Rated speed rpm : 1190  
Tolerance 1/min : +- 15

rack travel mm : 0.75  
Tolerance mm : +- 0.75  
Rated speed rpm : 1300

LOW IDLE

control lever  
position degree : 85.0  
tolerance degree : ± 4.0

Testing:

Rated speed rpm : 300  
rack travel mm : 5.50  
Tolerance mm : ± 0.10

Rated speed rpm : 200  
CRT mm min. : > 8.60

Rated speed rpm : 350

---

TORQUE CONTROL

Rated speed rpm : 550  
rack travel mm : 15.10  
Tolerance mm : ± 0.05

Rated speed rpm : 1050  
rack travel mm : 15.10  
Tolerance mm : ± 0.10

---

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 400  
Pressure hPa : 1100  
rack travel mm : 15.10  
Tolerance mm : ± 0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 400  
rack travel mm : 9.15  
Tolerance mm : ± 0.20

Rated speed rpm : 400

Pressure hPa : 150  
rack travel mm : 10.05  
Tolerance mm : ± 0.20

Pressure hPa : 550  
rack travel mm : 13.85  
Tolerance mm : ± 0.20

---

START CUT-OUT

L15

Rated speed rpm : < 220  
Check  
speed 1/min : < 240

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 1100  
Rated speed rpm : 1050  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 240.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 135.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

BREAKAWAY

Rack travel in mm : 14.10  
Rated speed rpm : 1095  
Tolerance 1/min : ± 5

---

STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 235.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 20.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 24.0

---

LOW IDLE

Rated speed rpm : 300  
rack travel mm : 6.20  
Tolerance mm :  $\pm$  0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 19.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  3.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 12.06.95  
Test oil : ISO 4113

Combination No. : 0 402 646 766

Injection pump  
Pump designation : PE6P120A320LS7837  
: -10  
EP type number : 0 412 626 855

Governor  
Governor design. : RQ300/950PA993-11  
Governor no. : 0 421 801 766

Cust. part No. : 0260742302

Customer-spec. information  
Customer : MB-NFZ  
Motor : OM441 LA  
Power KW : 250.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Overflow quantity  
min. l/h : 110  
Tolerance l/h : ± 10.0

Test nozzle holder  
assembly : 1 688 901 105

Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

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Test lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0  
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 5.25  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 20.50  
Tolerance mm : ± 0.50

Firing order : 6- 3- 5- 2- 4-  
: 1-

Phasing : 0-60-120-180-240  
: -300-360  
Tolerance : ± 0.30  
Check  
tolerance \*NW : ± 0.75

Start of delivery mark

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 550

Rack travel in mm : 15.10  
Tolerance mm : ± 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 252.0



Tolerance  
 cm<sup>3</sup>/1000 strokes : + 1.0

---

Check tolerance  
 cm<sup>3</sup>/1000S. : + 4.0

---

Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 5.0

---

Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0

Rated speed rpm : 300

Rack travel in mm : 6.20  
 Tolerance mm : + 0.30

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 19.0

Tolerance  
 cm<sup>3</sup>/1000 strokes : + 3.0

Check tolerance  
 cm<sup>3</sup>/1000S. : + 6.0

Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 6.0

Check tolerance  
 cm<sup>3</sup>/1000S. : 10.0

(B) SETTING OF INJECTION PUMP  
 WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 300  
 guide sleeve  
 travel mm : 2.28  
 Tolerance mm : + 0.10

Rated speed rpm : 1005  
 guide sleeve  
 travel mm : 6.34  
 Tolerance mm : + 0.10

Rated speed rpm : 950  
 guide sleeve  
 travel mm : 6.00  
 Tolerance mm : + 0.10

Rated speed rpm : 340  
 guide sleeve  
 travel mm : 3.46  
 Tolerance mm : + 0.10

Rated speed rpm : 580  
 guide sleeve  
 travel mm : 6.00  
 Tolerance mm : + 0.10

Rated speed rpm : 1190  
 guide sleeve  
 travel mm : 11.50  
 Tolerance mm : + 0.50

GUIDE SLEEVE POSITION

Rated speed rpm : 600

Rack travel in mm : 20.00  
 Tolerance mm : + 0.80

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 550  
 Aneroid pressure  
 hPa : 1100

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 252.0

Tolerance  
 cm<sup>3</sup>/1000 strokes : + 1.0

Check tolerance  
 cm<sup>3</sup>/1000S. : + 4.0

Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 5.0

Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0

RATED SPEED

control lever  
 position degree : 100.0  
 tolerance degree : + 4.0

rack travel mm : 14.10  
 Rated speed rpm : 998  
 Tolerance 1/min : + 8

rack travel mm : 4.00  
 Rated speed rpm : 1105  
 Tolerance 1/min : + 15

rack travel mm : 0.75  
 Tolerance mm : + 0.75  
 Rated speed rpm : 1300

LOW IDLE

control lever  
 position degree : 72.0  
 tolerance degree : + 4.0

### Testing:

Rated speed rpm : 300  
rack travel mm : 3.50  
Tolerance mm : ± 0.10

rack travel mm : 2.00  
Rated speed rpm : 340  
Tolerance 1/min : ± 20

Rated speed rpm : 200

CRT mm min. : > 6.50

---

### TORQUE CONTROL

Rated speed rpm : 550  
rack travel mm : 15.10  
Tolerance mm : ± 0.05

Rated speed rpm : 950  
rack travel mm : 15.10  
Tolerance mm : ± 0.10

---

### ANEROID/ALTITUDE COMPENSATOR TEST

### SETTING

Rated speed rpm : 400  
Pressure hPa : 1100  
rack travel mm : 15.10  
Tolerance mm : ± 0.05

### MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 400  
rack travel mm : 9.15  
Tolerance mm : ± 0.20

Rated speed rpm : 400

Pressure hPa : 150  
rack travel mm : 10.05  
Tolerance mm : ± 0.20

Pressure hPa : 550  
rack travel mm : 13.85  
Tolerance mm : ± 0.20

---

### START CUT-OUT

Rated speed rpm : < 220  
Check  
speed 1/min : < 240

---

### FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 1100  
Rated speed rpm : 950  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 240.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 135.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0

---

### BREAKAWAY

Rack travel in mm : 14.10  
Rated speed rpm : 998  
Tolerance 1/min : ± 8

---

### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 235.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 20.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 24.0

---

### LOW IDLE

Rated speed rpm : 300  
rack travel mm : 6.20  
Tolerance mm : ± 0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 19.0

Tolerance  
cm<sup>3</sup>/1000 strokes : +- 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 12.06.95  
Test oil : ISO 4113

Combination No. : 0 402 646 767

Injection pump  
Pump designation : FE6P120A320LS7837  
: -10

EP type number : 0 412 626 855

Governor  
Governor design. : RQV300...950PA797  
: -42  
Governor no. : 0 421 814 133

Cust. part No. : 0260741502

Customer spec. information  
Customer : MB-NFZ  
Motor : OM441 LA  
Power KW : 250.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Test nozzle holder  
assembly : 1 688 901 105

Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

Test Lines : 1 680 750 075

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Outside diameter : 8.0

x inside diameter : 3.0

x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 5.25  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 20.50  
Tolerance mm : ± 0.50

Firing order : 6- 3- 5- 2- 4-  
: 1-

Phasing : 0-60-120-180-240  
: -300-360

Tolerance : ± 0.30  
Check  
tolerance \*NW : ± 0.75

Start of delivery mark

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 550

Rack travel in mm : 15.10  
Tolerance mm : ± 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 252.0

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0

Check tolerance  
 cm<sup>3</sup>/1000S. : + 4.0

---

Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 5.0

---

Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0

Rated speed rpm : 300

Rack travel in mm : 6.20  
 Tolerance mm : + 0.30

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 19.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : + 3.0

Check tolerance  
 cm<sup>3</sup>/1000S. : + 6.0

Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 6.0

Check tolerance  
 cm<sup>3</sup>/1000S. : 10.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 300  
 guide sleeve  
 travel mm : 1.29  
 Tolerance mm : + 0.20

Rated speed rpm : 1009  
 guide sleeve  
 travel mm : 8.55  
 Tolerance mm : + 0.15

Rated speed rpm : 567  
 guide sleeve  
 travel mm : 4.66  
 Tolerance mm : + 0.25

Rated speed rpm : 617  
 guide sleeve  
 travel mm : 5.23  
 Tolerance mm : + 0.25

Rated speed rpm : 780  
 guide sleeve  
 travel mm : 6.31  
 Tolerance mm : + 0.25

Rated speed rpm : 1092

guide sleeve  
 travel mm : 10.00  
 Tolerance mm : + 0.25

Rated speed rpm : 1190  
 guide sleeve  
 travel mm : 11.50  
 Tolerance mm : + 0.50

GUIDE SLEEVE POSITION

Rated speed rpm : 1040  
 Rack travel in mm : 14.10  
 Tolerance mm : + 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 550  
 Aneroid pressure  
 hPa : 1100  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 252.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : + 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : + 4.0  
 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 5.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0

RATED SPEED

control lever  
 position degree : 122.0  
 tolerance degree : + 4.0

rack travel mm : 14.10  
 Rated speed rpm : 995  
 Tolerance 1/min : + 5

rack travel mm : 4.00  
 Rated speed rpm : 1100  
 Tolerance 1/min : + 15

rack travel mm : 0.70  
 Tolerance mm : + 0.70  
 Rated speed rpm : 1200

LOW IDLE

control lever  
position degree : 85.0  
tolerance degree : ± 4.0

Testing:

Rated speed rpm : 300  
rack travel mm : 5.50  
Tolerance mm : ± 0.10

Rated speed rpm : 200

CRT mm min. : > 8.50

Rated speed rpm : 325

---

TORQUE CONTROL

Rated speed rpm : 550  
rack travel mm : 15.10  
Tolerance mm : ± 0.05

Rated speed rpm : 950  
rack travel mm : 15.10  
Tolerance mm : ± 0.10

---

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 400  
Pressure hPa : 1100  
rack travel mm : 15.10  
Tolerance mm : ± 0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 400  
rack travel mm : 9.15  
Tolerance mm : ± 0.20

Rated speed rpm : 400

Pressure hPa : 150  
rack travel mm : 10.05  
Tolerance mm : ± 0.20

Pressure hPa : 550  
rack travel mm : 73.85  
Tolerance mm : ± 0.20

---

START CUT-OUT

Rated speed rpm : < 220  
Check  
speed 1/min : < 240

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 1100  
Rated speed rpm : 950  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 240.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 135.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

BREAKAWAY

Rack travel in mm : 14.10  
Rated speed rpm : 995  
Tolerance 1/min : ± 5

---

STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 235.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 20.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 24.0

---

LOW IDLE

Rated speed rpm : 300  
rack travel mm : 6.20  
Tolerance mm :  $\pm$  0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 19.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  3.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  6.0  
Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 12.06.95  
Test oil : ISO 4113  
Combination No. : 0 402 646 768  
Injection pump  
Pump designation : PE6P120A320LS7837  
: -10  
EP type number : 0 412 626 855  
Governor  
Governor design. : RQ300/950PA971-12  
Governor no. : 0 421 801 765

Cust. part No. : 0260741302

---

Customer-spec. information  
Customer : MB-NFZ  
Motor : OM441 LA  
Power KW : 250.0

---

TEST BENCH REQUIREMENTS

Inlet line : 3.1  
Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0  
Overflow valve : 1 417 413 047

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Test nozzle holde  
assembly : 1 688 901 105

Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

Test lines : 1 680 750 075

Outside diameter : 8.0  
x inside diameter : 3.0  
x length mm : 1000

---

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

---

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 5.25  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 20.50  
Tolerance mm : ± 0.50

Firing order : 6- 3- 5- 2- 4-  
: 1-

Phasing : 0-60-120-180-240  
: -300-360

Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.75

Start of delivery mark

Barrel no. : 6

---

BASIC SETTING

Rated speed rpm : 550

---

Rack travel in mm : 15.10  
Tolerance mm : ± 0.05

---

Del. quantity  
cm<sup>3</sup>/1000 strokes : 252.0

---

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0

---



Check tolerance  
cm<sup>3</sup>/1000S. : + 4.0

---

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

---

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

Rated speed rpm : 300

Rack travel in mm : 6.20  
Tolerance mm : + 0.30

Del. quantity  
cm<sup>3</sup>/1000 strokes : 19.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 3.0

Check tolerance  
cm<sup>3</sup>/1000S. : + 6.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0

Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

---

GUIDE SLEEVE TRAVEL

Rated speed rpm : 300  
guide sleeve  
travel mm : 1.72  
Tolerance mm : + 0.10

Rated speed rpm : 1005  
guide sleeve  
travel mm : 6.34  
Tolerance mm : + 0.10

Rated speed rpm : 950  
guide sleeve  
travel mm : 6.00  
Tolerance mm : + 0.10

Rated speed rpm : 429  
guide sleeve  
travel mm : 4.46  
Tolerance mm : + 0.10

Rated speed rpm : 580  
guide sleeve  
travel mm : 6.00  
Tolerance mm : + 0.10

Rated speed rpm : 1190

guide sleeve  
travel mm : 11.50  
Tolerance mm : + 0.50

---

GUIDE SLEEVE POSITION

Rated speed rpm : 600

Rack travel in mm : 20.00  
Tolerance mm : + 0.80

---

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 550  
Aneroid pressure

hPa : 1100

Del. quantity  
cm<sup>3</sup>/1000 strokes : 252.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : + 4.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

---

RATED SPEED

control lever  
position degree : 100.0  
tolerance degree : + 4.0

rack travel mm : 14.10  
Rated speed rpm : 998  
Tolerance 1/min : + 8

rack travel mm : 4.00  
Rated speed rpm : 1108  
Tolerance 1/min : + 15

rack travel mm : 0.75  
Tolerance mm : + 0.75  
Rated speed rpm : 1200

---

LOW IDLE

control lever  
position degree : 75.0  
tolerance degree : + 4.0

Testing:

Rated speed rpm : 300  
rack travel mm : 5.50  
Tolerance mm : +- 0.10

rack travel mm : 2.00  
Rated speed rpm : 435  
Tolerance 1/min : +- 30

Rated speed rpm : 200  
CRT mm min. : > 8.60

---

#### TORQUE CONTROL

Rated speed rpm : 550  
rack travel mm : 15.10  
Tolerance mm : +- 0.05

Rated speed rpm : 950  
rack travel mm : 15.10  
Tolerance mm : +- 0.10

---

#### ANEROID/ALTITUDE COMPENSATOR TEST

#### SETTING

Rated speed rpm : 400  
Pressure hPa : 1100  
rack travel mm : 15.10  
Tolerance mm : +- 0.05

#### MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 400  
rack travel mm : 9.15  
Tolerance mm : +- 0.20

Rated speed rpm : 400

Pressure hPa : 150  
rack travel mm : 10.05  
Tolerance mm : +- 0.20

Pressure hPa : 550  
rack travel mm : 13.85  
Tolerance mm : +- 0.20

---

#### START CUT-OUT

Rated speed rpm : < 220  
Check  
speed 1/min : < 240

---

#### FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 1100  
Rated speed rpm : 950  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 240.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 135.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 4.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

#### BREAKAWAY

Rack travel in mm : 14.10  
Rated speed rpm : 998  
Tolerance 1/min : +- 8

---

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 235.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 20.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 24.0

---

#### LOW IDLE

Rated speed rpm : 300

rack travel mm : 6.20  
Tolerance mm :  $\pm$  0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 19.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  3.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 12.06.95  
Test oil : ISO 4113

Combination No. : 0 402 646 769

Injection pump  
Pump designation : FE6P120A320LS7837  
: -10

EP type number : 0 412 626 855

Governor  
Governor design. : RQV300...950PA1168  
: -5

Governor no. : 0 421 814 132

Cust. part No. : 0260740002

Customer-spec. information  
Customer : MB-NFZ  
Motor : OM441 LA  
Power KW : 250.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Overflow quantity  
min. l/h : 80  
Tolerance l/h : ± 10.0

Test nozzle holde  
assembly : 1 688 901 105

Opening pressure  
bar : 208.5

MO1

Tolerance bar : ± 1.5

Test lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0  
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 5.25  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 20.50  
Tolerance mm : ± 0.50

Firing order : 6- 3- 5- 2- 4-  
: 1-

Phasing : 0-60-120-180-240  
: -300-360

Tolerance : ± 0.30

Check  
tolerance °NW : ± 0.75

Start of delivery mark

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 550

Rack travel in mm : 15.10  
Tolerance mm : ± 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 252.0

<hr/>	
Tolerance	
cm <sup>3</sup> /1000 strokes	: + 1.0
<hr/>	
Check tolerance	
cm <sup>3</sup> /1000S.	: + 4.0
<hr/>	
Spread	
Tolerance	
cm <sup>3</sup> /1000 strokes	: 5.0
<hr/>	
Check tolerance	
cm <sup>3</sup> /1000S.	: 9.0
<hr/>	
Rated speed rpm	: 300
<hr/>	
Rack travel in mm	: 6.20
Tolerance mm	: + 0.30
Del. quantity	
cm <sup>3</sup> /1000 strokes	: 19.0
Tolerance	
cm <sup>3</sup> /1000 strokes	: + 3.0
Check tolerance	
cm <sup>3</sup> /1000S.	: + 6.0
Spread	
Tolerance	
cm <sup>3</sup> /1000 strokes	: 6.0
Check tolerance	
cm <sup>3</sup> /1000S.	: 10.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

---

GUIDE SLEEVE TRAVEL

Rated speed rpm	: 300
guide sleeve	
travel mm	: 1.26
Tolerance mm	: + 0.20
<hr/>	
Rated speed rpm	: 1009
guide sleeve	
travel mm	: 8.28
Tolerance mm	: + 0.15
<hr/>	
Rated speed rpm	: 575
guide sleeve	
travel mm	: 4.46
Tolerance mm	: + 0.25
<hr/>	
Rated speed rpm	: 625
guide sleeve	
travel mm	: 5.03
Tolerance mm	: + 0.25
<hr/>	
Rated speed rpm	: 790
guide sleeve	
travel mm	: 6.16

MO2

Tolerance mm	: + 0.25
<hr/>	
Rated speed rpm	: 1103
guide sleeve	
travel mm	: 10.00
Tolerance mm	: +- 0.25
<hr/>	
Rated speed rpm	: 1200
guide sleeve	
travel mm	: 11.50
Tolerance mm	: + 0.50

---

GUIDE SLEEVE POSITION

Rated speed rpm	: 1060
<hr/>	
Rack travel in mm	: 14.10
Tolerance mm	: + 1.30

---

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm	: 550
Aneroid pressure	
hPa	: 1100
Del. quantity	
cm <sup>3</sup> /1000 strokes	: 252.0
Tolerance	
cm <sup>3</sup> /1000 strokes	: + 1.0
Check tolerance	
cm <sup>3</sup> /1000S.	: + 4.0
Spread	
Tolerance	
cm <sup>3</sup> /1000 strokes	: 5.0
Check tolerance	
cm <sup>3</sup> /1000S.	: 9.0

---

RATED SPEED

control lever	
position degree	: 123.0
tolerance degree	: + 4.0
<hr/>	
rack travel mm	: 14.10
Rated speed rpm	: 995
Tolerance 1/min	: + 5
<hr/>	
rack travel mm	: 4.00
Rated speed rpm	: 1090
Tolerance 1/min	: + 15
<hr/>	
rack travel mm	: 0.70
Tolerance mm	: + 0.70
Rated speed rpm	: 1200

---

LOW IDLE

control lever  
position degree : 79.0  
tolerance degree : +- 4.0

#### Testing:

Rated speed rpm : 300  
rack travel mm : 3.50  
Tolerance mm : +- 0.10

Rated speed rpm : 200

CRT mm min. : > 5.70

Rated speed rpm : 325

---

#### TORQUE CONTROL

Rated speed rpm : 550  
rack travel mm : 15.10  
Tolerance mm : +- 0.05

Rated speed rpm : 950  
rack travel mm : 15.10  
Tolerance mm : +- 0.10

---

#### ANEROID/ALTITUDE COMPENSATOR TEST

#### SETTING

Rated speed rpm : 400  
Pressure hPa : 1100  
rack travel mm : 15.10  
Tolerance mm : +- 0.05

#### MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 400  
rack travel mm : 9.15  
Tolerance mm : +- 0.20

Rated speed rpm : 400

Pressure hPa : 150  
rack travel mm : 10.05  
Tolerance mm : +- 0.20

Pressure hPa : 550  
rack travel mm : 13.85  
Tolerance mm : +- 0.20

---

#### START CUT-OUT

M03

Rated speed rpm : < 220  
Check  
speed 1/min : < 240

---

#### FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 1100  
Rated speed rpm : 950  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 242.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 6.0  
Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 135.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 4.0  
Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

#### BREAKAWAY

Rack travel in mm : 14.10  
Rated speed rpm : 995  
Tolerance 1/min : +- 5

---

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 235.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 20.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 24.0

---

LOW IDLE

Rated speed rpm : 300  
rack travel mm : 6.20  
Tolerance mm :  $\pm$  0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 19.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  3.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 02.06.95  
Test oil : ISO 4113

Combination No. : 0 402 646 770

Injection pump  
Pump designation : PE6P120A320LS7836  
: -10  
EP type number : 0 412 626 854

Governer  
Governer design. : RQV300...1050PA1168  
: -7  
Governer no. : 0 421 814 143

Cust. part No. : 0250749902

Customer spec. information

Customer : MB-NFZ  
Motor : OM401 LA  
Power KW : 200.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Overflow quantity  
min. l/h : 75  
Tolerance l/h : ± 10.0

Test nozzle holder  
assembly : 1 688 901 105

Opening pressure  
bar : 208.5

M05

Tolerance bar : ± 1.5

Test lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0  
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 5.55  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 20.50  
Tolerance mm : ± 0.50

Firing order : 6- 3- 5- 2- 4-  
: 1-

Phasing : 0-60-120-180-240  
: -300-360  
Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.75

Start of delivery mark

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 1050

Rack travel in mm : 13.00  
Tolerance mm : ± 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 190.0



<hr/>	
Tolerance	
cm <sup>3</sup> /1000 strokes	: + 1.0
<hr/>	
Check tolerance	
cm <sup>3</sup> /1000S.	: + 4.0
<hr/>	
Spreed	
Tolerance	
cm <sup>3</sup> /1000 strokes	: 5.0
<hr/>	
Check tolerance	
cm <sup>3</sup> /1000S.	: 9.0
<hr/>	
Rated speed rpm	: 300
<hr/>	
Rack travel in mm	: 5.80
Tolerance mm	: + 0.30
Del. quantity	
cm <sup>3</sup> /1000 strokes	: 19.0
Tolerance	
cm <sup>3</sup> /1000 strokes	: + 3.0
Check tolerance	
cm <sup>3</sup> /1000S.	: + 6.0
Spreed	
Tolerance	
cm <sup>3</sup> /1000 strokes	: 6.0
Check tolerance	
cm <sup>3</sup> /1000S.	: 10.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm	: 300
guide sleeve	
travel mm	: 1.29
Tolerance mm	: + 0.25
<hr/>	
Rated speed rpm	: 1107
guide sleeve	
travel mm	: 8.52
Tolerance mm	: + 0.25
<hr/>	
Rated speed rpm	: 1640
guide sleeve	
travel mm	: 25.13
Tolerance mm	: + 0.25
<hr/>	
Rated speed rpm	: 558
guide sleeve	
travel mm	: 4.53
Tolerance mm	: + 0.25
<hr/>	
Rated speed rpm	: 608
guide sleeve	
travel mm	: 5.03

Tolerance mm	: + 0.25
<hr/>	
Rated speed rpm	: 820
guide sleeve	
travel mm	: 6.13
Tolerance mm	: + 0.25
<hr/>	
Rated speed rpm	: 1183
guide sleeve	
travel mm	: 10.00
Tolerance mm	: + 0.25
<hr/>	
Rated speed rpm	: 1280
guide sleeve	
travel mm	: 11.50
Tolerance mm	: + 0.50

GUIDE SLEEVE POSITION

Rated speed rpm	: 1145
<hr/>	
Rack travel in mm	: 12.00
Tolerance mm	: + 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm	: 1050
Aneroid pressure	
hPa	: 800
Del. quantity	
cm <sup>3</sup> /1000 strokes	: 190.0
Tolerance	
cm <sup>3</sup> /1000 strokes	: + 1.0
Check tolerance	
cm <sup>3</sup> /1000S.	: + 4.0
Spreed	
Tolerance	
cm <sup>3</sup> /1000 strokes	: 5.0
Check tolerance	
cm <sup>3</sup> /1000S.	: 9.0

RATED SPEED

control lever	
position degree	: 120.0
tolerance degree	: + 4.0
<hr/>	
rack travel mm	: 12.00
Rated speed rpm	: 1095
Tolerance 1/min	: + 5
<hr/>	
rack travel mm	: 4.00
Rated speed rpm	: 1170
Tolerance 1/min	: + 15
<hr/>	
rack travel mm	: 0.75

Tolerance mm : +- 0.75  
Rated speed rpm : 1300

---

LOW IDLE

control lever  
position degree : 65.0  
tolerance degree : +- 4.0

Testing:

Rated speed rpm : 300  
rack travel mm : 3.50  
Tolerance mm : +- 0.10

Rated speed rpm : 200

CRT mm min. : > 5.30

Rated speed rpm : 350

---

TORQUE CONTROL

Rated speed rpm : 1050  
rack travel mm : 13.00  
Tolerance mm : +- 0.05

Rated speed rpm : 550  
rack travel mm : 13.00  
Tolerance mm : +- 0.10

---

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 400  
Pressure hPa : 800  
rack travel mm : 13.00  
Tolerance mm : +- 0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 400  
rack travel mm : 10.90  
Tolerance mm : +- 0.15

Rated speed rpm : 400

Pressure hPa : 200  
rack travel mm : 11.40  
Tolerance mm : +- 0.15

Pressure hPa : 350

M07

rack travel mm : 12.25  
Tolerance mm : +- 0.15

---

START CUT-OUT

Rated speed rpm : < 220  
Check  
speed 1/min : < 240

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 800  
Rated speed rpm : 550  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 189.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 6.0  
Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 132.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 4.0  
Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

BREAKAWAY

Rack travel in mm : 12.00  
Rated speed rpm : 1095  
Tolerance 1/min : +- 5

---

STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 210.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 20.0

Check tolerance  
cm<sup>3</sup>/1000s. : ± 24.0

---

LOW IDLE

Rated speed rpm : 300  
rack travel mm : 5.80  
Tolerance mm : ± 0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 19.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000s. : ± 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000s. : 10.0

---

End of test specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 02.06.95  
Test oil : ISO 4113

Combination No. : 0 402 646 771

Injection pump  
Pump designation : PE6P120A320LS7836-2  
EP type number : 0 412 626 944

Governor  
Governor design. : RQV300...1050PA1168  
: -8  
Governor no. : 0 421 814 141

Cust. part No. : 0250749802

---

Customer-spec. information  
Customer : MB-NFZ  
Motor : OM401 LA  
Power KW : 180.0

---

## TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Overflow quantity  
min. l/h : 95  
Tolerance l/h : ± 10.0

Test nozzle holder  
assembly : 1 688 901 105

Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

M09

Test lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0  
x length mm : 1000

---

## REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

---

## BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 5.55  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 20.50  
Tolerance mm : ± 0.50

Firing order : 6- 3- 5- 2- 4-  
: 1-

Phasing : 0-60-120-180-240  
: -300-360  
Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.75

Start of delivery mark

Barrel no. : 6

---

## BASIC SETTING

Rated speed rpm : 1050

---

Rack travel in mm : 12.40  
Tolerance mm : ± 0.05

---

Del. quantity  
cm<sup>3</sup>/1000 strokes : 173.0

---

Tolerance  
 cm<sup>3</sup>/1000 strokes : + 1.0

---

Check tolerance  
 cm<sup>3</sup>/1000S. : + 4.0

---

Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 5.0

---

Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0

Rated speed rpm : 300

Rack travel in mm : 5.80  
 Tolerance mm : + 0.30  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 19.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : + 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : + 6.0  
 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 6.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 10.0

(B) SETTING OF INJECTION PUMP  
 WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 300  
 guide sleeve  
 travel mm : 1.29  
 Tolerance mm : + 0.20

Rated speed rpm : 1107  
 guide sleeve  
 travel mm : 8.51  
 Tolerance mm : + 0.15

Rated speed rpm : 558  
 guide sleeve  
 travel mm : 4.53  
 Tolerance mm : + 0.25

Rated speed rpm : 608  
 guide sleeve  
 travel mm : 5.03  
 Tolerance mm : + 0.25

Rated speed rpm : 820  
 guide sleeve  
 travel mm : 6.13  
 Tolerance mm : + 0.25

Rated speed rpm : 1183  
 guide sleeve  
 travel mm : 10.00  
 Tolerance mm : + 0.25

Rated speed rpm : 1280  
 guide sleeve  
 travel mm : 11.50  
 Tolerance mm : + 0.50

GUIDE SLEEVE POSITION

Rated speed rpm : 1150  
 Rack travel in mm : 11.40  
 Tolerance mm : + 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1050  
 Aneroid pressure  
 hPa : 700  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 173.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : + 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : + 4.0  
 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 5.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0

RATED SPEED

control lever  
 position degree : 119.0  
 tolerance degree : + 4.0

rack travel mm : 11.40  
 Rated speed rpm : 1095  
 Tolerance 1/min : + 5

rack travel mm : 4.00  
 Rated speed rpm : 1170  
 Tolerance 1/min : + 15

rack travel mm : 0.75  
 Tolerance mm : + 0.75  
 Rated speed rpm : 1300

LOW IDLE

control lever  
position degree : 65.0  
tolerance degree : ± 4.0

Testing:

Rated speed rpm : 300  
rack travel mm : 3.50  
Tolerance mm : ± 0.10

Rated speed rpm : 200

CRT mm min. : > 5.30

Rated speed rpm : 350

---

TORQUE CONTROL

Rated speed rpm : 1050  
rack travel mm : 12.40  
Tolerance mm : ± 0.05

Rated speed rpm : 550  
rack travel mm : 12.40  
Tolerance mm : ± 0.10

---

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 400  
Pressure hPa : 700  
rack travel mm : 12.40  
Tolerance mm : ± 0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 400  
rack travel mm : 10.90  
Tolerance mm : ± 0.15

Rated speed rpm : 400

Pressure hPa : 200  
rack travel mm : 11.45  
Tolerance mm : ± 0.20

Pressure hPa : 300  
rack travel mm : 12.00  
Tolerance mm : ± 0.20

---

START CUT-OUT

Rated speed rpm : < 220  
Check  
speed 1/min : < 240

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 700  
Rated speed rpm : 550  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 169.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 132.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

BREAKAWAY

Rack travel in mm : 11.40  
Rated speed rpm : 1095  
Tolerance 1/min : ± 5

---

STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 210.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 15.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 19.0

---

LOW IDLE

Rated speed rpm : 300  
rack travel mm : 5.80  
Tolerance mm :  $\pm$  0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 19.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  3.0  
Check tolerance  
cm<sup>3</sup>/1000s. :  $\pm$  6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000s. : 10.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 31.05.95  
Test oil : ISO 4113  
Combination No. : 0 402 646 785A  
Injection pump  
Pump designation : FE6P120A320LS7869  
EP type number : 0 412 626 887  
Governor  
Governor design. : RQV300...1050PA1078K  
Governor no. : 0 421 815 359

Cust. part No. : 9275445

---

Customer-spec. information  
Customer : LIEBHERR  
Motor : D 9406 TI  
Power KW : 300.0

---

TEST BENCH REQUIREMENTS

Inlet line : 3.1  
Test oil inlet temp. °C : 40  
Tolerance °C : ± 2.0  
Overflow valve : 1 417 413 047

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Overflow quantity min. l/h : 165  
Tolerance l/h : ± 20.0

Test nozzle holder assembly : 1 688 901 105

Opening pressure bar : 208.5  
Tolerance bar : ± 1.5

Test lines : 1 680 750 075  
Outside diameter : 8.0  
x inside diameter : 3.0  
x length mm : 1000

---

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

---

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 3.65  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 10.50  
Tolerance mm : ± 1.50

Firing order : 1- 6- 3- 5- 2-  
: 4

Phasing : 0-60-120-180-240  
: -300  
Tolerance : ± 0.30  
Check tolerance °NW : ± 0.50

---

BASIC SETTING

Rated speed rpm : 1050

---

Rack travel in mm : 12.00  
Tolerance mm : ± 0.05

---

Del. quantity cm<sup>3</sup>/1000 strokes : 279.0

---

Tolerance cm<sup>3</sup>/1000 strokes : ± 1.0

---

Check tolerance cm<sup>3</sup>/1000S. : ± 4.0



<hr/>	
Spreed	
Tolerance	
cm <sup>3</sup> /1000 strokes :	5.0
<hr/>	
Check tolerance	
cm <sup>3</sup> /1000S. :	9.0
Rated speed rpm :	300
Rack travel in mm :	6.10
Tolerance mm :	+ 0.10
Del. quantity	
cm <sup>3</sup> /1000 strokes :	50.0
Tolerance	
cm <sup>3</sup> /1000 strokes :	+ 3.0
Check tolerance	
cm <sup>3</sup> /1000S. :	+ 6.0
Spreed	
Tolerance	
cm <sup>3</sup> /1000 strokes :	6.0
Check tolerance	
cm <sup>3</sup> /1000S. :	10.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

---

GUIDE SLEEVE TRAVEL

Rated speed rpm :	300
guide sleeve	
travel mm :	1.69
Tolerance mm :	+ 0.25
Rated speed rpm :	1117
guide sleeve	
travel mm :	10.38
Tolerance mm :	+ 0.25
Rated speed rpm :	746
guide sleeve	
travel mm :	6.20
Tolerance mm :	+ 0.25
Rated speed rpm :	353
guide sleeve	
travel mm :	2.45
Tolerance mm :	+ 0.25
Rated speed rpm :	403
guide sleeve	
travel mm :	3.18
Tolerance mm :	+ 0.25
Rated speed rpm :	450
guide sleeve	
travel mm :	3.66
Tolerance mm :	+ 0.25

Rated speed rpm :	1320
guide sleeve	
travel mm :	13.50
Tolerance mm :	+ 0.50

---

GUIDE SLEEVE POSITION

Rated speed rpm :	1185
Rack travel in mm :	11.00
Tolerance mm :	+ 1.30

---

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm :	1050
Aneroid pressure	
hPa :	1550
Del. quantity	
cm <sup>3</sup> /1000 strokes :	279.0
Tolerance	
cm <sup>3</sup> /1000 strokes :	+ 1.0
Check tolerance	
cm <sup>3</sup> /1000S. :	+ 4.0
Spreed	
Tolerance	
cm <sup>3</sup> /1000 strokes :	5.0
Check tolerance	
cm <sup>3</sup> /1000S. :	9.0

---

RATED SPEED

control lever	
position degree :	121.0
tolerance degree :	+ 4.0
rack travel mm :	11.00
Rated speed rpm :	1105
Tolerance 1/min :	+ 5
rack travel mm :	4.00
Rated speed rpm :	1185
Tolerance 1/min :	+ 15
rack travel mm :	0.50
Tolerance mm :	+ 0.50
Rated speed rpm :	1300

---

LOW IDLE

control lever	
position degree :	74.0
tolerance degree :	+ 4.0

Testing:

Rated speed rpm : 300  
rack travel mm : 6.10  
Tolerance mm : ± 0.10

Rated speed rpm : 200

CRT mm min. : > 8.00

Rated speed rpm : 400

---

TORQUE CONTROL

Rated speed rpm : 1050  
rack travel mm : 12.00  
Tolerance mm : ± 0.05

Rated speed rpm : 800  
rack travel mm : 11.65  
Tolerance mm : ± 0.10

Rated speed rpm : 500  
rack travel mm : 9.75  
Tolerance mm : ± 0.10

Rated speed rpm : 950  
rack travel mm : 11.85  
Tolerance mm : ± 0.10

Rated speed rpm : 600  
rack travel mm : 10.25  
Tolerance mm : ± 0.10

---

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 1050  
Pressure hPa : 1550  
rack travel mm : 12.00  
Tolerance mm : ± 0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 1050  
rack travel mm : 9.35  
Tolerance mm : ± 0.10

Rated speed rpm : 1050

Pressure hPa : 725  
rack travel mm : 10.70  
Tolerance mm : ± 0.05

Pressure hPa : 525  
rack travel mm : 9.50  
Tolerance mm : ± 0.10

---

START CUT-OUT

Rated speed rpm : < 220  
Check  
speed 1/min : < 240

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 1550  
Rated speed rpm : 800  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 295.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000s. : ± 6.0

Aneroid pressure  
hPa : 1550  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 270.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000s. : ± 6.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 550  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 250.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000s. : ± 4.0  
Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000s. : 12.0

---

BREAKAWAY

Rack travel in mm : 11.00  
Rated speed rpm : 1105  
Tolerance 1/min : ± 5

---

STARTING FUEL DELIVERY

Rated speed rpm : 100  
rack travel mm : 9.55  
Tolerance mm :  $\pm$  0.20  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 170.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  10.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  14.0

---

LOW IDLE

Rated speed rpm : 300  
rack travel mm : 6.10  
Tolerance mm :  $\pm$  0.10  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 50.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  3.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 22.06.95  
Test oil : ISO 4113

Combination No. : 0 402 646 786A

Injection pump  
Pump designation : PE6P120A320LS7846  
EP type number : 0 412 626 865

Governor  
Governor design. : RQV300...1050PA1065  
Governor no. : 0 421 814 053

Cust. part No. : 0240747802

Customer-spec. information

Customer : MB-NFZ  
Motor : OM401 LA  
Power KW : 230.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Tolerance l/h : ± 10.0

Test nozzle holde  
assembly : 1 688 901 105

Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

Test lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0

x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 5.55  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 20.50  
Tolerance mm : ± 0.50

Firing order : 6- 3- 5- 2- 4-  
: 1

Phasing : 0-60-120-180-240  
: -300

Tolerance : ± 0.30  
Check  
tolerance \*NW : ± 0.50

Start of delivery mark

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 550

Rack travel in mm : 14.80  
Tolerance mm : ± 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 230.0

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0

---

Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0

---

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

---

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

Rated speed rpm : 300

Rack travel in mm : 6.30  
Tolerance mm : ± 0.30

Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.0

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0

Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0

Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

---

GUIDE SLEEVE TRAVEL

Rated speed rpm : 300  
guide sleeve  
travel mm : 1.13  
Tolerance mm : ± 0.20

Rated speed rpm : 1108  
guide sleeve  
travel mm : 9.82  
Tolerance mm : ± 0.10

Rated speed rpm : 370  
guide sleeve  
travel mm : 2.00  
Tolerance mm : ± 0.25

Rated speed rpm : 420  
guide sleeve  
travel mm : 2.49  
Tolerance mm : ± 0.25

Rated speed rpm : 750  
guide sleeve  
travel mm : 4.87  
Tolerance mm : ± 0.25

Rated speed rpm : 1310  
guide sleeve  
travel mm : 13.50  
Tolerance mm : ± 0.50

---

GUIDE SLEEVE POSITION

Rated speed rpm : 1200

Rack travel in mm : 13.80  
Tolerance mm : ± 1.30

---

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 550  
Aneroid pressure  
hPa : 1000

Del. quantity  
cm<sup>3</sup>/1000 strokes : 230.0

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

---

RATED SPEED

control lever  
position degree : 104.0  
tolerance degree : ± 4.0

rack travel mm : 13.80  
Rated speed rpm : 1095  
Tolerance 1/min : ± 5

rack travel mm : 4.00  
Rated speed rpm : 1195  
Tolerance 1/min : ± 15

rack travel mm : 0.75  
Tolerance mm : ± 0.75  
Rated speed rpm : 1300

---

LOW IDLE

control lever  
position degree : 68.0  
tolerance degree : ± 4.0

Testing:

Rated speed rpm : 300  
rack travel mm : 5.20  
Tolerance mm : ± 0.10

Rated speed rpm : 200  
CRT mm min. : > 8.10

Rated speed rpm : 350

TORQUE CONTROL

Rated speed rpm : 550  
rack travel mm : 14.80  
Tolerance mm : ± 0.05

Rated speed rpm : 1050  
rack travel mm : 14.80  
Tolerance mm : ± 0.10

Rated speed rpm : 700  
rack travel mm : 14.80  
Tolerance mm : ± 0.05

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 400  
Pressure hPa : 1000  
rack travel mm : 14.80  
Tolerance mm : ± 0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 400  
rack travel mm : 10.80  
Tolerance mm : ± 0.15

Rated speed rpm : 400

Pressure hPa : 400  
rack travel mm : 12.90  
Tolerance mm : ± 0.20

Pressure hPa : 600  
rack travel mm : 14.15  
Tolerance mm : ± 0.20

START CUT-OUT

Rated speed rpm : < 220

Check  
speed 1/min : < 240

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 1000  
Rated speed rpm : 1050  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 229.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 134.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

BREAKAWAY

Rack travel in mm : 13.80  
Rated speed rpm : 1095  
Tolerance 1/min : ± 5

STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 210.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 15.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 19.0

LOW IDLE

Rated speed rpm : 300  
rack travel mm : 6.30  
Tolerance mm :  $\pm$  0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  3.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 22.06.95  
Test oil : ISO 4113  
  
Combination No. : 0 402 646 794A  
  
Injection pump  
Pump designation : FE6P120A320LS7858  
EP type number : 0 412 626 875  
  
Governor  
Governor design. : RQV300...1050PA1033  
: -9  
Governor no. : 0 421 814 028  
  
Cust. part No. : 0230749402

Customer-spec. information  
Customer : 4B-NFZ  
Motor : OM401 LA  
Power KW : 200.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1  
  
Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0  
  
Overflow valve : 1 417 413 047  
  
Inlet press. bar : 1.5  
Tolerance bar : ± 0.1  
  
Tolerance l/h : ± 10.0  
  
Test nozzle holder  
assembly : 1 688 901 105  
  
Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

Test lines : 1 680 750 075  
Outside diameter : 8.0  
x inside diameter : 3.0  
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0  
  
Prestroke mm : 5.55  
Tolerance mm : ± 0.05  
  
test only : ± 0.10  
  
Rack travel in mm : 20.50  
Tolerance mm : ± 0.50  
  
Firing order : 6- 3- 5- 2- 4-  
: 1-  
  
Phasing : 0-60-120-180-240  
: -300-360  
Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.50

Start of delivery mark

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 1050  
  
Rack travel in mm : 13.00  
Tolerance mm : ± 0.05  
  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 190.0



<hr/>	
Tolerance	
cm <sup>3</sup> /1000 strokes	: + 1.0
<hr/>	
Check tolerance	
cm <sup>3</sup> /1000S.	: + 4.0
<hr/>	
Spread	
Tolerance	
cm <sup>3</sup> /1000 strokes	: 5.0
<hr/>	
Check tolerance	
cm <sup>3</sup> /1000S.	: 9.0
<hr/>	
Rated speed rpm	: 300
<hr/>	
Rack travel in mm	: 5.80
Tolerance mm	: + 0.30
Del. quantity	
cm <sup>3</sup> /1000 strokes	: 19.0
Tolerance	
cm <sup>3</sup> /1000 strokes	: + 3.0
Check tolerance	
cm <sup>3</sup> /1000S.	: + 6.0
Spread	
Tolerance	
cm <sup>3</sup> /1000 strokes	: 6.0
Check tolerance	
cm <sup>3</sup> /1000S.	: 10.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

---

GUIDE SLEEVE TRAVEL

Rated speed rpm	: 300
guide sleeve	
travel mm	: 1.29
Tolerance mm	: + 0.20
<hr/>	
Rated speed rpm	: 1107
guide sleeve	
travel mm	: 8.52
Tolerance mm	: + 0.15
<hr/>	
Rated speed rpm	: 1183
guide sleeve	
travel mm	: 10.00
Tolerance mm	: + 0.25
<hr/>	
Rated speed rpm	: 558
guide sleeve	
travel mm	: 4.53
Tolerance mm	: + 0.25
<hr/>	
Rated speed rpm	: 608
guide sleeve	
travel mm	: 5.03

Tolerance mm	: + 0.25
<hr/>	
Rated speed rpm	: 820
guide sleeve	
travel mm	: 6.13
Tolerance mm	: + 0.25
<hr/>	
Rated speed rpm	: 1280
guide sleeve	
travel mm	: 11.50
Tolerance mm	: + 0.50

---

GUIDE SLEEVE POSITION

Rated speed rpm	: 1155
<hr/>	
Rack travel in mm	: 12.00
Tolerance mm	: + 1.30

---

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm	: 1050
Aneroid pressure	
hPa	: 800
Del. quantity	
cm <sup>3</sup> /1000 strokes	: 190.0
Tolerance	
cm <sup>3</sup> /1000 strokes	: + 1.0
Check tolerance	
cm <sup>3</sup> /1000S.	: + 4.0
Spread	
Tolerance	
cm <sup>3</sup> /1000 strokes	: 5.0
Check tolerance	
cm <sup>3</sup> /1000S.	: 9.0

---

RATED SPEED

control lever	
position degree	: 120.0
tolerance degree	: + 4.0
<hr/>	
rack travel mm	: 12.00
Rated speed rpm	: 1095
Tolerance 1/min	: + 5
<hr/>	
rack travel mm	: 4.00
Rated speed rpm	: 1175
Tolerance 1/min	: + 15
<hr/>	
rack travel mm	: 0.75
Tolerance mm	: + 0.75
Rated speed rpm	: 1300

---

LOW IDLE

control lever  
position degree : 66.0  
tolerance degree : +- 4.0

Testing:

Rated speed rpm : 300  
rack travel mm : 5.80  
Tolerance mm : +- 0.10

Rated speed rpm : 200  
CRT mm min. : > 7.60

Rated speed rpm : 350

---

TORQUE CONTROL

Rated speed rpm : 1050  
rack travel mm : 13.00  
Tolerance mm : +- 0.05

Rated speed rpm : 550  
rack travel mm : 13.00  
Tolerance mm : +- 0.10

---

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 400  
Pressure hPa : 800  
rack travel mm : 13.00  
Tolerance mm : +- 0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 400  
rack travel mm : 10.55  
Tolerance mm : +- 0.15

Rated speed rpm : 400

Pressure hPa : 200  
rack travel mm : 11.40  
Tolerance mm : +- 0.20

Pressure hPa : 350  
rack travel mm : 12.25  
Tolerance mm : +- 0.20

---

START CUT-OUT

Rated speed rpm : < 220  
Check  
speed 1/min : < 240

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 800  
Rated speed rpm : 550  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 189.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 127.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 4.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

BREAKAWAY

Rack travel in mm : 12.00  
Rated speed rpm : 1095  
Tolerance 1/min : +- 5

---

STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 210.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 15.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 19.0

---

LOW IDLE

Rated speed rpm : 300  
rack travel mm : 5.80  
Tolerance mm :  $\pm$  0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 19.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  3.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 22.06.95  
Test oil : ISO 4113

Combination No. : 0 402 646 795A

Injection pump  
Pump designation : PE6P120A320LS7858-1  
EP type number : 0 412 626 911

Governor  
Governor design. : RQV300...1050PA1033  
: -8  
Governor no. : 0 421 814 027

Cust. part No. : 0230749002

Customer-spec. information  
Customer : MB-NFZ  
Motor : OM401 LA  
Power KW : 180.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Tolerance L/h : ± 10.0

Test nozzle holde  
assembly : 1 688 901 105

Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

Test lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0  
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 5.55  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 20.50  
Tolerance mm : ± 0.50

Firing order : 6- 3- 5- 2- 4-  
: 1-

Phasing : 0-60-120-180-240  
: -300-360

Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.50

Start of delivery mark

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 1050

Rack travel in mm : 12.40  
Tolerance mm : ± 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 173.0

<hr/>	
Tolerance	
cm <sup>3</sup> /1000 strokes	: ± 1.0
<hr/>	
Check tolerance	
cm <sup>3</sup> /1000S.	: ± 4.0
<hr/>	
Spread	
Tolerance	
cm <sup>3</sup> /1000 strokes	: 5.0
<hr/>	
Check tolerance	
cm <sup>3</sup> /1000S.	: 9.0
<hr/>	
Rated speed rpm	: 300
<hr/>	
Rack travel in mm	: 5.80
Tolerance mm	: ± 0.30
Del. quantity	
cm <sup>3</sup> /1000 strokes	: 19.0
Tolerance	
cm <sup>3</sup> /1000 strokes	: ± 3.0
Check tolerance	
cm <sup>3</sup> /1000S.	: ± 6.0
Spread	
Tolerance	
cm <sup>3</sup> /1000 strokes	: 6.0
Check tolerance	
cm <sup>3</sup> /1000S.	: 10.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm	: 300
guide sleeve	
travel mm	: 1.29
Tolerance mm	: ± 0.20
<hr/>	
Rated speed rpm	: 1107
guide sleeve	
travel mm	: 8.52
Tolerance mm	: ± 0.15
<hr/>	
Rated speed rpm	: 558
guide sleeve	
travel mm	: 4.53
Tolerance mm	: ± 0.25
<hr/>	
Rated speed rpm	: 608
guide sleeve	
travel mm	: 5.03
Tolerance mm	: ± 0.25
<hr/>	
Rated speed rpm	: 820
guide sleeve	
travel mm	: 6.13

Tolerance mm	: ± 0.25
<hr/>	
Rated speed rpm	: 1183
guide sleeve	
travel mm	: 10.00
Tolerance mm	: ± 0.25
<hr/>	
Rated speed rpm	: 1280
guide sleeve	
travel mm	: 11.50
Tolerance mm	: ± 0.50

GUIDE SLEEVE POSITION

Rated speed rpm	: 1150
<hr/>	
Rack travel in mm	: 11.40
Tolerance mm	: ± 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm	: 1050
Aneroid pressure	
hPa	: 700
Del. quantity	
cm <sup>3</sup> /1000 strokes	: 173.0
Tolerance	
cm <sup>3</sup> /1000 strokes	: ± 1.0
Check tolerance	
cm <sup>3</sup> /1000S.	: ± 4.0
Spread	
Tolerance	
cm <sup>3</sup> /1000 strokes	: 5.0
Check tolerance	
cm <sup>3</sup> /1000S.	: 9.0

RATED SPEED

control lever	
position degree	: 119.0
tolerance degree	: ± 4.0
<hr/>	
rack travel mm	: 11.40
Rated speed rpm	: 1095
Tolerance 1/min	: ± 5
<hr/>	
rack travel mm	: 4.00
Rated speed rpm	: 1170
Tolerance 1/min	: ± 15
<hr/>	
rack travel mm	: 0.75
Tolerance mm	: ± 0.75
Rated speed rpm	: 1300

LOW IDLE

control lever  
position degree : 66.0  
tolerance degree : ± 4.0

#### Testing:

Rated speed rpm : 300  
rack travel mm : 5.80  
Tolerance mm : ± 0.10

Rated speed rpm : 200

CRT mm min. : > 7.60

Rated speed rpm : 375

---

#### TORQUE CONTROL

Rated speed rpm : 1050  
rack travel mm : 12.40  
Tolerance mm : ± 0.05

Rated speed rpm : 550  
rack travel mm : 12.40  
Tolerance mm : ± 0.10

---

#### ANEROID/ALTITUDE COMPENSATOR TEST

##### SETTING

Rated speed rpm : 400  
Pressure hPa : 700  
rack travel mm : 12.40  
Tolerance mm : ± 0.05

##### MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 400  
rack travel mm : 11.05  
Tolerance mm : ± 0.15

Rated speed rpm : 400

Pressure hPa : 200  
rack travel mm : 11.45  
Tolerance mm : ± 0.20

Pressure hPa : 300  
rack travel mm : 12.00  
Tolerance mm : ± 0.20

---

#### START CUT-OUT

M27

Rated speed rpm : < 220  
Check  
speed 1/min : < 240

---

#### FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 700  
Rated speed rpm : 550  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 169.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 135.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

#### BREAKAWAY

Rack travel in mm : 11.40  
Rated speed rpm : 1095  
Tolerance 1/min : ± 5

---

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 210.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 15.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 19.0

---

LOW IDLE

Rated speed rpm : 300  
rack travel mm : 5.80  
Tolerance mm :  $\pm$  0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 19.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  3.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  6.0  
Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 24.06.91  
Test oil : ISO 4113

Combination No. : 0 402 646 877

Injection pump  
Pump designation : PE6P130A720RS7122-1  
EP type number : 0 412 636 812

Governor  
Governor design. : RQV225...930PA922  
Governor no. : 0 421 813 763

Cust. part No. :

Customer-spec. information

Customer : VOLVO-TRUCK  
Motor : TD162 FL,FJ,  
Power KW : 331.0

TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet  
temp. °C : 40  
Tolerance °C : + 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 1.5

Test nozzle holde  
assembly : 1 688 901 019

Opening pressure  
bar : 208.5  
Tolerance bar : + 1.5

Test lines : 1 680 750 067

Outside diameter : 6.0

x inside diameter : 1.5  
x length mm : 1000

REMARKS

Start-of-delivery setting with ROBO diaphragm.

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : + 1.0

Firing order : 1- 5- 3- 6- 2-  
: 4

Phasing : 0-60-120-180-240  
: -300

Tolerance : + 0.30  
Check  
tolerance °NW : + 0.75

BASIC SETTING

Del. quantity  
cm3/1000 strokes : 302.5

Tolerance  
cm3/1000 strokes : + 1.5

Check tolerance  
cm3/1000S. : + 5.0

Speed  
Tolerance  
cm3/1000 strokes : 6.0

Check tolerance  
cm3/1000S. : 10.0

Del. quantity  
cm3/1000 strokes : 28.0

Tolerance  
cm3/1000 strokes : + 2.5

Check tolerance  
cm3/1000S. : + 5.0

Speed



Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 8.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 250  
guide sleeve  
travel mm : 1.20  
Tolerance mm : ± 0.20

Rated speed rpm : 975  
guide sleeve  
travel mm : 8.30  
Tolerance mm : ± 0.10

Rated speed rpm : 350  
guide sleeve  
travel mm : 2.40  
Tolerance mm : ± 0.30

Rated speed rpm : 700  
guide sleeve  
travel mm : 5.90  
Tolerance mm : ± 0.30

Rated speed rpm : 1090  
guide sleeve  
travel mm : 9.70  
Tolerance mm : ± 0.20

GUIDE SLEEVE POSITION

Rated speed rpm : 1100

Rack travel in mm : 9.00  
Tolerance mm : ± 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 700  
Aneroid pressure  
hPa : 1200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 302.5  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 5.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0

N02

Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

RATED SPEED

control lever  
position degree : 120.0  
tolerance degree : ± 4.0

rack travel mm : 12.50  
Rated speed rpm : 975  
Tolerance 1/min : ± 5

rack travel mm : 4.00  
Rated speed rpm : 1105  
Tolerance 1/min : ± 15

rack travel mm : 0.50  
Tolerance mm : ± 0.50  
Rated speed rpm : 1200

LOW IDLE

control lever  
position degree : 64.0  
tolerance degree : ± 4.0

Testing:

Rated speed rpm : 250  
rack travel mm : 5.00  
Tolerance mm : ± 0.10

Rated speed rpm : 100

CRT mm min. : > 6.50

Rated speed rpm : 350

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 500  
Pressure hPa : 1200  
rack travel mm : 13.55  
Tolerance mm : ± 0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 500

rack travel mm : 9.60  
Tolerance mm : ± 0.10  
  
Rated speed rpm : 500  
  
Pressure hPa : 720  
rack travel mm : 3.60  
Tolerance mm : ± 0.10  
  
Pressure hPa : 85  
rack travel mm : 0.25  
Tolerance mm : ± 0.05

Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 8.0

---

End of test specification sheet

---

#### FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : -  
Rated speed rpm : 700  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 182.5  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 5.0

---

#### BREAKAWAY

Rack travel in mm : 12.50  
Rated speed rpm : 975  
Tolerance 1/min : ± 5

---

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
rack travel mm : 9.60  
Tolerance mm : ± 0.10  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 130.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 10.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 14.0

---

#### LOW IDLE

Del. quantity  
cm<sup>3</sup>/1000 strokes : 28.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 2.5  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 5.0

N03

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 21.07.95  
Test oil : ISO 4113

Combination No. : 0 402 646 969

Injection pump  
Pump designation : PE6P120A320RS7248  
: -10Z  
EP type number : 0 412 626 901

Governor  
Governor design. : RQV275...1150PA986  
Governor no. : 0 421 813 920

Cust. part No. : 1248041/4

## Customer-spec. information

Customer : DAF  
Motor : RS 200 L  
Power kW : 200.0

## TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Overflow quantity  
min. l/h : 130  
Tolerance l/h : ± 10.0

Test nozzle holder  
assembly : 1 688 901 105

Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

NO4

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter : 3.0  
x length mm : 600

## REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 5.25  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 11.50  
Tolerance mm : ± 0.50

Firing order : 1- 5- 3- 6- 2-  
: 4

Phasing : 0-60-120-180-240  
: -300

Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.50

Start of delivery mark

Barrel no. : 1

## BASIC SETTING

Rated speed rpm : 1000

Rack travel in mm : 11.70  
Tolerance mm : ± 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 167.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 1.0

---

Check tolerance  
cm<sup>3</sup>/1000S. : + 4.0

---

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

---

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

Rated speed rpm : 275

Rack travel in mm : 5.40  
Tolerance mm : + 0.10

Del. quantity  
cm<sup>3</sup>/1000 strokes : 16.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 3.0

Check tolerance  
cm<sup>3</sup>/1000S. : + 6.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0

Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

---

GUIDE SLEEVE POSITION

Rated speed rpm : 1335

Rack travel in mm : 10.30  
Tolerance mm : + 1.30

---

FULL LOAD DELIVERY AT FULL LOAD STOP

Aneroid pressure  
hPa : -

Del. quantity  
cm<sup>3</sup>/1000 strokes : 167.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : + 4.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

---

RATED SPEED

control lever  
position degree : 120.0  
tolerance degree : + 4.0

rack travel mm : 10.70  
Rated speed rpm : 1182  
Tolerance 1/min : + 5

rack travel mm : 4.00  
Rated speed rpm : 1290  
Tolerance 1/min : + 15

rack travel mm : 0.70  
Tolerance mm : + 0.70  
Rated speed rpm : 1450

---

LOW IDLE

control lever  
position degree : 83.0  
tolerance degree : + 4.0

Testing:

Rated speed rpm : 275  
rack travel mm : 4.70  
Tolerance mm : + 0.10

Rated speed rpm : 175

CRT mm min. : > 7.50

Rated speed rpm : 340

---

TORQUE CONTROL

Rated speed rpm : 1000  
rack travel mm : 11.70  
Tolerance mm : + 0.05

Rated speed rpm : 1150  
rack travel mm : 11.70  
Tolerance mm : + 0.10

---

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 600

Pressure hPa : 1000  
rack travel mm : 11.70  
Tolerance mm :  $\pm$  0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 600  
rack travel mm : 9.10  
Tolerance mm :  $\pm$  0.10

Rated speed rpm : 600

Pressure hPa : 340  
rack travel mm : 10.75  
Tolerance mm :  $\pm$  0.05

Pressure hPa : 200  
rack travel mm : 9.70  
Tolerance mm :  $\pm$  0.10

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : -  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 117.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  1.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  4.0

BREAKAWAY

Rack travel in mm : 10.70  
Rated speed rpm : 1182  
Tolerance 1/min :  $\pm$  5

LOW IDLE

Rated speed rpm : 275  
rack travel mm : 5.40  
Tolerance mm :  $\pm$  0.10  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 16.0  
Tolerance  
cm<sup>3</sup>/1000 strokes :  $\pm$  3.0  
Check tolerance  
cm<sup>3</sup>/1000S. :  $\pm$  6.0  
Spread

Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 28.06.94  
Test oil : ISO 4113

Combination No. : 0 402 646 983

Injection pump  
Pump designation : PE6P120A320LS7846  
EP type number : 0 412 626 865

Governor  
Governor design. : RQV300...1050PA1033  
: -2  
Governor no. : 0 421 813 994

Cust. part No. : 0230741102

Customer-spec. information

Customer : MB-NFZ  
Motor : OM401 LA  
Power KW : 230.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Overflow quantity  
min. l/h : 110  
Tolerance l/h : ± 10.0

Test nozzle holder  
assembly : 1 688 901 105

Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

NO7

Test lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0  
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 5.25  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 20.50  
Tolerance mm : ± 0.50

Firing order : 6- 3- 5- 2- 4-  
: 1

Phasing : 0-60-120-180-240  
: -300

Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.50

Start of delivery mark

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 700

Rack travel in mm : 13.00  
Tolerance mm : ± 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 231.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : + 4.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

Rated speed rpm : 300

Rack travel in mm : 5.20  
Tolerance mm : + 0.30

Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 3.0

Check tolerance  
cm<sup>3</sup>/1000S. : + 6.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0

Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 300  
guide sleeve  
travel mm : 0.74

Tolerance mm : + 0.20

Rated speed rpm : 1107  
guide sleeve  
travel mm : 8.38

Tolerance mm : + 0.15

Rated speed rpm : 575  
guide sleeve  
travel mm : 4.52

Tolerance mm : + 0.25

Rated speed rpm : 625  
guide sleeve  
travel mm : 5.04

Tolerance mm : + 0.25

Rated speed rpm : 830  
guide sleeve  
travel mm : 6.13

Tolerance mm : + 0.25

Rated speed rpm : 1190  
guide sleeve  
travel mm : 10.00

Tolerance mm : + 0.25

Rated speed rpm : 1290  
guide sleeve  
travel mm : 11.50

Tolerance mm : + 0.50

GUIDE SLEEVE POSITION

Rated speed rpm : 1160

Rack travel in mm : 11.70  
Tolerance mm : + 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 700  
Aneroid pressure  
hPa : 1000

Del. quantity  
cm<sup>3</sup>/1000 strokes : 231.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : + 4.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

RATED SPEED

control lever  
position degree : 120.0

tolerance degree : + 4.0

rack travel mm : 12.00  
Rated speed rpm : 1095

Tolerance 1/min : + 5

rack travel mm : 4.00  
Rated speed rpm : 1170

Tolerance 1/min : + 15

rack travel mm : 0.75  
Tolerance mm : + 0.75

Rated speed rpm : 1300

LOW IDLE

control lever  
position degree : 80.0  
tolerance degree : ± 4.0

Testing:

Rated speed rpm : 300  
rack travel mm : 5.20  
Tolerance mm : ± 0.10

Rated speed rpm : 200

CRT mm min. : > 7.50

Rated speed rpm : 350

---

TORQUE CONTROL

Rated speed rpm : 700  
rack travel mm : 13.00  
Tolerance mm : ± 0.05

Rated speed rpm : 1050  
rack travel mm : 13.00  
Tolerance mm : ± 0.10

---

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 400  
Pressure hPa : 1000  
rack travel mm : 13.00  
Tolerance mm : ± 0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 400  
rack travel mm : 10.35  
Tolerance mm : ± 0.15

Rated speed rpm : 400

Pressure hPa : 400  
rack travel mm : 11.55  
Tolerance mm : ± 0.10

Pressure hPa : 600  
rack travel mm : 12.50  
Tolerance mm : ± 0.10

---

START CUT-OUT

Rated speed rpm : < 220  
Check  
speed 1/min : < 240

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 1000  
Rated speed rpm : 1050  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 228.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 5.0  
Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 133.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0  
Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

BREAKAWAY

Rack travel in mm : 12.00  
Rated speed rpm : 1095  
Tolerance 1/min : ± 5

---

STARTING FUEL DELIVERY

Rated speed rpm : 100  
rack travel mm : 13.75  
Tolerance mm : ± 0.25  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 210.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 10.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 14.0



---

LOW IDLE

Rated speed rpm : 300  
rack travel mm : 5.20  
Tolerance mm : ± 0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 22.06.95  
Test oil : ISO 4113  
  
Combination No. : 0 402 646 983A  
  
Injection pump  
Pump designation : PE6P120A320LS7846  
EP type number : 0 412 626 865  
  
Governor  
Governor design. : RGV300...1050PA1033  
: -2  
Governor no. : 0 421 813 994  
  
Cust. part No. : 0230741102

Customer-spec. information  
Customer : MB-NFZ  
Motor : OM401 LA  
Power KW : 230.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1  
  
Test oil inlet  
temp. °C : 40  
Tolerance °C : + 2.0  
  
Overflow valve : 1 417 413 047  
  
Inlet press. bar : 1.5  
Tolerance bar : + 0.1  
  
Tolerance l/h : + 10.0  
  
Test nozzle holder  
assembly : 1 688 901 105  
  
Opening pressure  
bar : 208.5  
Tolerance bar : + 1.5

Test lines : 1 680 750 075  
Outside diameter : 8.0  
x inside diameter : 3.0  
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : + 1.0  
  
Prestroke mm : 5.55  
Tolerance mm : + 0.05  
  
test only : + 0.10  
  
Rack travel in mm : 20.50  
Tolerance mm : + 0.50  
  
Firing order : 6- 3- 5- 2- 4-  
: 1-  
  
Phasing : 0-60-120-180-240  
: -300-360  
Tolerance : + 0.30  
Check  
tolerance °NW : + 0.50

Start of delivery mark

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 550  
  
Rack travel in mm : 14.80  
Tolerance mm : + 0.05  
  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 230.0

<hr/>	
Tolerance	
cm <sup>3</sup> /1000 strokes	: + 1.0
<hr/>	
Check tolerance	
cm <sup>3</sup> /1000S.	: + 4.0
<hr/>	
Spreed	
Tolerance	
cm <sup>3</sup> /1000 strokes	: 5.0
<hr/>	
Check tolerance	
cm <sup>3</sup> /1000S.	: 9.0
<hr/>	
Rated speed rpm	: 300
<hr/>	
Rack travel in mm	: 6.30
Tolerance mm	: + 0.30
Del. quantity	
cm <sup>3</sup> /1000 strokes	: 13.0
Tolerance	
cm <sup>3</sup> /1000 strokes	: + 3.0
Check tolerance	
cm <sup>3</sup> /1000S.	: + 6.0
Spreed	
Tolerance	
cm <sup>3</sup> /1000 strokes	: 6.0
Check tolerance	
cm <sup>3</sup> /1000S.	: 10.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

---

GUIDE SLEEVE TRAVEL

Rated speed rpm	: 300
guide sleeve	
travel mm	: 1.29
Tolerance mm	: + 0.20
<hr/>	
Rated speed rpm	: 1108
guide sleeve	
travel mm	: 8.53
Tolerance mm	: + 0.15
<hr/>	
Rated speed rpm	: 558
guide sleeve	
travel mm	: 4.53
Tolerance mm	: + 0.25
<hr/>	
Rated speed rpm	: 608
guide sleeve	
travel mm	: 5.03
Tolerance mm	: + 0.25
<hr/>	
Rated speed rpm	: 820
guide sleeve	
travel mm	: 6.13

Tolerance mm	: + 0.25
<hr/>	
Rated speed rpm	: 1183
guide sleeve	
travel mm	: 10.00
Tolerance mm	: + 0.25
<hr/>	
Rated speed rpm	: 1280
guide sleeve	
travel mm	: 11.50
Tolerance mm	: + 0.50

---

GUIDE SLEEVE POSITION

Rated speed rpm	: 1145
<hr/>	
Rack travel in mm	: 13.80
Tolerance mm	: + 1.30

---

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm	: 550
Aneroid pressure	
hPa	: 1000
Del. quantity	
cm <sup>3</sup> /1000 strokes	: 230.0
Tolerance	
cm <sup>3</sup> /1000 strokes	: + 1.0
Check tolerance	
cm <sup>3</sup> /1000S.	: + 4.0
Spreed	
Tolerance	
cm <sup>3</sup> /1000 strokes	: 5.0
Check tolerance	
cm <sup>3</sup> /1000S.	: 9.0

---

RATED SPEED

control lever	
position degree	: 121.0
tolerance degree	: + 4.0
<hr/>	
rack travel mm	: 13.80
Rated speed rpm	: 1095
Tolerance 1/min	: + 5
<hr/>	
rack travel mm	: 4.00
Rated speed rpm	: 1195
Tolerance 1/min	: + 15
<hr/>	
rack travel mm	: 0.75
Tolerance mm	: + 0.75
Rated speed rpm	: 1300

---

LOW IDLE

control lever  
position degree : 66.0  
tolerance degree : ± 4.0

Testing:

Rated speed rpm : 300  
rack travel mm : 5.20  
Tolerance mm : ± 0.10

Rated speed rpm : 200

CRT mm min. : > 7.00

Rated speed rpm : 350

---

TORQUE CONTROL

Rated speed rpm : 550  
rack travel mm : 14.80  
Tolerance mm : ± 0.05

Rated speed rpm : 1050  
rack travel mm : 14.80  
Tolerance mm : ± 0.10

Rated speed rpm : 700  
rack travel mm : 14.80  
Tolerance mm : ± 0.05

---

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 400  
Pressure hPa : 1000  
rack travel mm : 14.80  
Tolerance mm : ± 0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 400  
rack travel mm : 10.80  
Tolerance mm : ± 0.15

Rated speed rpm : 400

Pressure hPa : 400  
rack travel mm : 12.90  
Tolerance mm : ± 0.20

Pressure hPa : 600  
rack travel mm : 14.15

Tolerance mm : ± 0.20

---

START CUT-OUT

Rated speed rpm : < 220  
Check  
speed 1/min : < 240

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 1000  
Rated speed rpm : 1050  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 229.0  
Tolerance

cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 134.0  
Tolerance

cm<sup>3</sup>/1000 strokes : ± 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 4.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

BREAKAWAY

Rack travel in mm : 13.80  
Rated speed rpm : 1095  
Tolerance 1/min : ± 5

---

STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 210.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 15.0

Check tolerance  
cm<sup>3</sup>/1000S. : ± 19.0

---

LOW IDLE

Rated speed rpm : 300  
rack travel mm : 6.30  
Tolerance mm : ± 0.30  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 31.05.95  
Test oil : ISO 4113  
Combination No. : 0 402 646 988  
Injection pump  
Pump designation : PE6P120A320RS7230  
: -10X  
EP type number : 0 412 626 899  
Governor  
Governor design. : RQV250...1000PA990K  
Governor no. : 0 421 815 274  
Cust. part No. : 1250705/4

Customer-spec. information  
Customer : DAF  
Motor : WS 295 L  
Power KW : 295.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1  
Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0  
Overflow valve : 1 417 413 025  
Inlet press. bar : 1.5  
Tolerance bar : ± 0.1  
Test nozzle holde  
assembly : 1 688 901 105  
Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5  
Test Lines : 1 680 750 089

Outside diameter : 8.0  
x inside diameter : 3.0  
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0  
Prestroke mm : 5.05  
Tolerance mm : ± 0.05  
test only : ± 0.10  
Rack travel in mm : 10.50  
Tolerance mm : ± 1.50  
Firing order : 1- 5- 3- 6- 2-  
: 4  
Phasing : 0-60-120-180-240  
: -300  
Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.50  
Start of delivery mark  
Barrel no. : 1

BASIC SETTING

Rated speed rpm : 980  
Rack travel in mm : 13.95  
Tolerance mm : ± 0.05  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 259.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : + 4.0

Spread  
Tolerance  
cm<sup>3</sup>/1000 strokes : 5.0

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

Rated speed rpm : 250

Rack travel in mm : 6.10  
Tolerance mm : + 0.10

Del. quantity  
cm<sup>3</sup>/1000 strokes : 17.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 3.0

Check tolerance  
cm<sup>3</sup>/1000S. : + 6.0

Spread  
Tolerance

cm<sup>3</sup>/1000 strokes : 8.0

Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 250  
guide sleeve  
travel mm : 1.53  
Tolerance mm : + 0.10

Rated speed rpm : 1038  
guide sleeve  
travel mm : 9.74  
Tolerance mm : + 0.10

Rated speed rpm : 686  
guide sleeve  
travel mm : 6.41  
Tolerance mm : + 0.25

Rated speed rpm : 284  
guide sleeve  
travel mm : 2.27  
Tolerance mm : + 0.25

Rated speed rpm : 334  
guide sleeve  
travel mm : 3.17  
Tolerance mm : + 0.25

Rated speed rpm : 390

guide sleeve  
travel mm : 3.79  
Tolerance mm : + 0.25

Rated speed rpm : 1310  
guide sleeve  
travel mm : 13.50  
Tolerance mm : + 0.50

GUIDE SLEEVE POSITION

Rated speed rpm : 1130

Rack travel in mm : 13.50  
Tolerance mm : + 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 980

Aneroid pressure  
hPa : 1500

Del. quantity  
cm<sup>3</sup>/1000 strokes : 259.0

Tolerance  
cm<sup>3</sup>/1000 strokes : + 1.0

Check tolerance  
cm<sup>3</sup>/1000S. : + 4.0

Spread  
Tolerance

cm<sup>3</sup>/1000 strokes : 5.0

Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

RATED SPEED

control lever  
position degree : 120.0  
tolerance degree : + 4.0

rack travel mm : 12.95  
Rated speed rpm : 1032  
Tolerance 1/min : + 5

rack travel mm : 4.00  
Rated speed rpm : 1150  
Tolerance 1/min : + 15

rack travel mm : 0.70  
Tolerance mm : + 0.70  
Rated speed rpm : 1275

LOW IDLE

control lever  
position degree : 70.0  
tolerance degree : + 4.0

Testing:

Rated speed rpm : 250  
rack travel mm : 5.20  
Tolerance mm : + 0.10

rack travel mm : 2.00  
Rated speed rpm : 350  
Tolerance 1/min : + 20

Rated speed rpm : 150

CRT mm min. : > 7.00

---

TORQUE CONTROL

Rated speed rpm : 980  
rack travel mm : 13.95  
Tolerance mm : + 0.05

Rated speed rpm : 600  
rack travel mm : 12.35  
Tolerance mm : + 0.05

Rated speed rpm : 825  
rack travel mm : 13.40  
Tolerance mm : + 0.10

Rated speed rpm : 400  
rack travel mm : 12.20  
Tolerance mm : + 0.10

---

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 980  
Pressure hPa : 1500  
rack travel mm : 13.95  
Tolerance mm : + 0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 980  
rack travel mm : 8.90  
Tolerance mm : + 0.10

Rated speed rpm : 980

Pressure hPa : 730

rack travel mm : 12.65  
Tolerance mm : + 0.05

Pressure hPa : 300  
rack travel mm : 9.80  
Tolerance mm : + 0.10

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 1500  
Rated speed rpm : 600  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 257.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : + 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. : + 5.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 600  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 165.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : + 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : + 4.0

---

BREAKAWAY

Rack travel in mm : 12.95  
Rated speed rpm : 1032  
Tolerance 1/min : + 5

---

LOW IDLE

Rated speed rpm : 250  
rack travel mm : 6.10  
Tolerance mm : + 0.10  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 17.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : + 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : + 6.0



Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000s. : 12.0

---

End of test specification sheet



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 24.04.95  
Test oil : ISO 4113  
Combination No. : 0 402 646 989  
Injection pump  
Pump designation : PE6P120A320RS7230  
                  : -10Y  
EP type number : 0 412 626 898  
Governor  
Governor design. : RQV250...1000PA990K  
Governor no. : 0 421 815 274

Cust. part No. : 1250708/2

Customer-spec. information

Customer : DAF  
Motor : WS 315 L  
Power KW : 315.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1  
Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0  
Overflow valve : 1 417 413 025

Inlet press. bar : 1.5  
Tolerance bar : ± 0.1

Test nozzle holder  
assembly : 1 688 901 105

Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0  
x inside diameter : 3.0  
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0

Prestroke mm : 5.05  
Tolerance mm : ± 0.05

test only : ± 0.10

Rack travel in mm : 14.50  
Tolerance mm : ± 0.50

Firing order : 1- 5- 3- 6- 2-  
                  : 4

Phasing : 0-60-120-180-240  
          : -300

Tolerance : ± 0.30  
Check  
tolerance \*NW : ± 0.50

Start of delivery mark

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 980

Rack travel in mm : 14.55  
Tolerance mm : ± 0.05

Del. quantity  
cm<sup>3</sup>/1000 strokes : 274.0

Tolerance  
cm<sup>3</sup>/1000 strokes : ± 1.0

Check tolerance  
 cm<sup>3</sup>/1000S. : + 4.0  


---

 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 5.0  


---

 Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0  
  
 Rated speed rpm : 250  
  
 Rack travel in mm : 6.20  
 Tolerance mm : + 0.10  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 17.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : + 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : + 6.0  
 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 8.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 12.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 250  
 guide sleeve  
 travel mm : 1.53  
 Tolerance mm : + 0.20  
  
 Rated speed rpm : 1045  
 guide sleeve  
 travel mm : 9.82  
 Tolerance mm : + 0.15  
  
 Rated speed rpm : 689  
 guide sleeve  
 travel mm : 6.43  
 Tolerance mm : + 0.25  
  
 Rated speed rpm : 284  
 guide sleeve  
 travel mm : 2.27  
 Tolerance mm : + 0.25  
  
 Rated speed rpm : 334  
 guide sleeve  
 travel mm : 3.08  
 Tolerance mm : + 0.25  
  
 Rated speed rpm : 400

guide sleeve  
 travel mm : 3.92  
 Tolerance mm : + 0.25  
  
 Rated speed rpm : 1310  
 guide sleeve  
 travel mm : 13.50  
 Tolerance mm : + 0.50

GUIDE SLEEVE POSITION

Rated speed rpm : 1130  
  
 Rack travel in mm : 13.50  
 Tolerance mm : + 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 980  
 Aneroid pressure  
 hPa : 1500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 274.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : + 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : + 4.0  
 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 5.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0

RATED SPEED

control lever  
 position degree : 120.0  
 tolerance degree : + 4.0  
  
 rack travel mm : 13.55  
 Rated speed rpm : 1032  
 Tolerance 1/min : + 8  
  
 rack travel mm : 4.00  
 Rated speed rpm : 1150  
 Tolerance 1/min : + 15  
  
 rack travel mm : 0.70  
 Tolerance mm : + 0.70  
 Rated speed rpm : 1275

LOW IDLE

control lever  
position degree : 70.0  
tolerance degree : + 4.0

Testing:

Rated speed rpm : 250  
rack travel mm : 5.20  
Tolerance mm : + 0.10

rack travel mm : 2.00  
Rated speed rpm : 340  
Tolerance 1/min : + 20

Rated speed rpm : 150

CRT mm min. : > 7.00

---

TORQUE CONTROL

Rated speed rpm : 980  
rack travel mm : 14.55  
Tolerance mm : + 0.05

Rated speed rpm : 600  
rack travel mm : 13.30  
Tolerance mm : + 0.05

Rated speed rpm : 400  
rack travel mm : 13.20  
Tolerance mm : + 0.10

Rated speed rpm : 800  
rack travel mm : 14.20  
Tolerance mm : + 0.10

---

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 980  
Pressure hPa : 1500  
rack travel mm : 14.55  
Tolerance mm : + 0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 980  
rack travel mm : 9.10  
Tolerance mm : + 0.10

Rated speed rpm : 980

Pressure hPa : 760

rack travel mm : 13.15  
Tolerance mm : + 0.05

Pressure hPa : 350  
rack travel mm : 10.30  
Tolerance mm : + 0.10

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 1500  
Rated speed rpm : 600  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 286.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : + 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. : + 5.0  
Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 600  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 172.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : + 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : + 4.0

---

BREAKAWAY

Rack travel in mm : 13.55  
Rated speed rpm : 1032  
Tolerance 1/min : + 8

---

LOW IDLE

Rated speed rpm : 250  
rack travel mm : 6.20  
Tolerance mm : + 0.10  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 17.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : + 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : + 6.0

Speed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 12.0

---

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 31.05.95  
Test oil : ISO 4113  
Combination No. : 0 402 648 798  
Injection pump  
Pump designation : PE8P120A320LS7830  
EP type number : 0 412 628 844  
Governor  
Governor design. : RQV350...1000PA1234  
Governor no. : 0 421 814 153

Cust. part No. : 0230746502

Customer-spec. information  
Customer : MTU  
Motor : 8V 183-02  
Power KW : 365.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1  
Test oil inlet  
temp. °C : 40  
Tolerance °C : ± 2.0  
Overflow valve : 2 417 413 077  
Inlet press. bar : 1.5  
Tolerance bar : ± 0.1  
Overflow quantity  
min. l/h : 85  
Tolerance l/h : ± 10.0  
Test nozzle holder  
assembly : 1 688 901 105  
Opening pressure  
bar : 208.5  
Tolerance bar : ± 1.5

Test lines : 1 680 750 075  
Outside diameter : 8.0  
x inside diameter : 3.0  
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0  
Tolerance bar : ± 1.0  
Prestroke mm : 4.45  
Tolerance mm : ± 0.05  
test only : ± 0.10  
Rack travel in mm : 20.25  
Tolerance mm : ± 0.75  
Firing order : 8- 7- 2- 6- 3  
                  : - 5- 4- 1  
Phasing : 0-45-90-135-180  
          : -225-270-315  
Tolerance : ± 0.30  
Check  
tolerance °NW : ± 0.75  
Start of delivery mark  
Barrel no. : 8

BASIC SETTING

Rated speed rpm : 1000  
Rack travel in mm : 13.00  
Tolerance mm : ± 0.05  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 237.0

Tolerance  
 cm<sup>3</sup>/1000 strokes : + 1.0  


---

 Check tolerance  
 cm<sup>3</sup>/1000S. : + 4.0  


---

 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 6.0  


---

 Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0  
  
 Rated speed rpm : 350  
  
 Rack travel in mm : 5.60  
 Tolerance mm : + 0.30  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 13.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : + 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : + 6.0  
 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 6.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 10.0

(B) SETTING OF INJECTION PUMP  
WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 350  
 guide sleeve  
 travel mm : 1.53  
 Tolerance mm : + 0.20  
  
 Rated speed rpm : 1055  
 guide sleeve  
 travel mm : 6.50  
 Tolerance mm : + 0.15  
  
 Rated speed rpm : 870  
 guide sleeve  
 travel mm : 4.94  
 Tolerance mm : + 0.25  
  
 Rated speed rpm : 404  
 guide sleeve  
 travel mm : 2.52  
 Tolerance mm : + 0.25  
  
 Rated speed rpm : 454  
 guide sleeve  
 travel mm : 3.07  
 Tolerance mm : + 0.25

Rated speed rpm : 570  
 guide sleeve  
 travel mm : 3.45  
 Tolerance mm : + 0.25  
  
 Rated speed rpm : 1241  
 guide sleeve  
 travel mm : 10.00  
 Tolerance mm : + 0.25  
  
 Rated speed rpm : 1330  
 guide sleeve  
 travel mm : 11.50  
 Tolerance mm : + 0.50

GUIDE SLEEVE POSITION

Rated speed rpm : 1220  
  
 Rack travel in mm : 12.00  
 Tolerance mm : + 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1000  
 Aneroid pressure  
 hPa : 2000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 237.0  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : + 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : + 4.0  
 Spreed  
 Tolerance  
 cm<sup>3</sup>/1000 strokes : 6.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 9.0

RATED SPEED

control lever  
 position degree : 109.0  
 tolerance degree : + 4.0  
  
 rack travel mm : 12.00  
 Rated speed rpm : 1045  
 Tolerance 1/min : + 5  
  
 rack travel mm : 4.00  
 Rated speed rpm : 1150  
 Tolerance 1/min : + 15  
  
 rack travel mm : 0.50  
 Tolerance mm : + 0.50

Rated speed rpm : 1250

---

LOW IDLE

control lever  
position degree : 66.0  
tolerance degree : +- 4.0

Testing:

Rated speed rpm : 350  
rack travel mm : 5.60  
Tolerance mm : +- 0.10

Rated speed rpm : 250  
CRT mm min. : > 6.70

Rated speed rpm : 400

---

TORQUE CONTROL

Rated speed rpm : 1000  
rack travel mm : 13.00  
Tolerance mm : +- 0.05

Rated speed rpm : 750  
rack travel mm : 13.00  
Tolerance mm : +- 0.05

---

ANEROID/ALTITUDE  
COMPENSATOR TEST

SETTING

Rated speed rpm : 500  
Pressure hPa : 2000  
rack travel mm : 13.00  
Tolerance mm : +- 0.05

MEASUREMENT

Pressure hPa : -  
Rated speed rpm : 500  
rack travel mm : 7.00  
Tolerance mm : +- 0.15

Rated speed rpm : 500

Pressure hPa : 400  
rack travel mm : 8.45  
Tolerance mm : +- 0.05

Pressure hPa : 1000  
rack travel mm : 11.40

Tolerance mm : +- 0.15

---

START CUT-OUT

Rated speed rpm : < 270  
Check  
speed 1/min : < 290

---

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure  
hPa : 2000  
Rated speed rpm : 750  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 238.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 6.0

Aneroid pressure  
hPa : -  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 92.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 4.0

---

BREAKAWAY

Rack travel in mm : 12.00  
Rated speed rpm : 1045  
Tolerance 1/min : +- 5

---

STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 230.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : +- 15.0  
Check tolerance  
cm<sup>3</sup>/1000S. : +- 19.0

---

LOW IDLE

Rated speed rpm : 350  
rack travel mm : 5.60  
Tolerance mm : +- 0.30



Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.0  
Tolerance  
cm<sup>3</sup>/1000 strokes : ± 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : ± 6.0  
Spreed  
Tolerance  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 10.0

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End of test specification sheet